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PRODUCING REFINING PIPELINE ENGINEERING MARKETING

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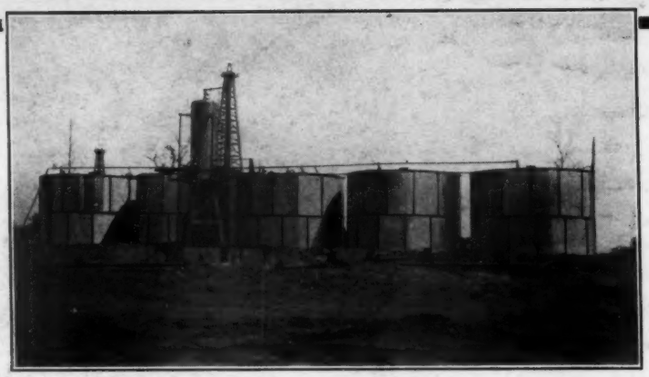

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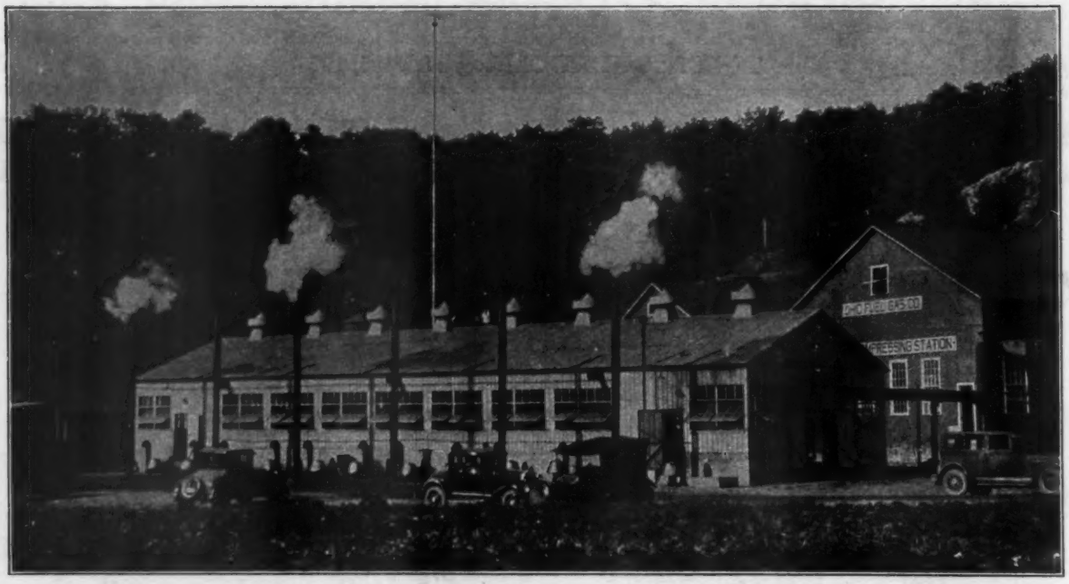

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Shut-in Movement Reduces Production

Highest production in 1930, week ending Feb. 22, average daily output 2,699,096 bbls. Peak of U. S. production, week ending Aug. 24, 1929, average 2,975,435 bbls.

Effect Will Be Shown in Figures for This Week. Continued Action Along This Line Will Bring Higher Prices

By Andrew M. Rowley

Lowest daily average crude oil production in the United States during 1930 was for week ending Dec. 27 with average output of 2,144,074 bbls.

Improvement in the crude oil production situation will be recorded during this week with a substantial decrease in output indicated from figures now available. Better conditions for the industry in general are in sight, with the shutting in of producing wells in different fields the basis for the belief higher prices for crude oil will be announced within the comparatively near future. Any increase in production, due to the opening of such wells upon an increase in price, might retard recovery but there is no question higher prices will result from shutting in of producing wells.

A decrease of probably 100,000 bbls. daily in production from the Oklahoma City Field is expected to be recorded this week as a result of the shutting in of wells there. Whether such a decrease will be offset later this month by a corresponding increase remains to be seen. Operators in that pool have a certain allowable production which they may recover as they wish during the month.

In Kansas, North and West Texas and other sections, operators are considering the matter of shutting in wells until higher prices are announced and such action seems probable as present prices do not pay for bringing the crude to the surface.

The California situation was muddled this week by the filing of a referendum petition against the Sharkey Bill, the recently enacted California conservation legislation. It seems probable California operators again will have to resort to voluntary co-operation in holding crude oil production to market requirements as the Sharkey Bill will become inoperative as soon as a check of the petition reveals sufficient valid signatures.

While it required near the zero point in crude oil prices to be touched before the bottom was reached in the depressed conditions affecting the industry, it is believed the bottom has been reached and that slow improvement will be evident from this time. More pronounced improvement probably will be noticeable later in the summer with indications the industry will show good profits on its balance sheets for the last quarter of this year.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of crude oil in the United States for week ended July 11 and a comparison with the previous week follows:

	July 11	July 4
Oklahoma—		
Oklahoma City	259,385	214,445
Seminole-St. Louis	136,710	136,560
Remainder of State	235,820	239,955
Total Oklahoma	631,915	590,960
East Texas—		
Kilgore	160,056	144,648
Lathrop	94,895	94,950
Joiner	126,588	112,374
Total East Texas	381,539	351,972
West Texas	206,001	206,772
North Central Texas	86,692	87,665
Texas Panhandle	58,640	66,792
East Central Texas	59,511	60,643
North Louisiana	33,770	35,955
Arkansas	43,475	43,915
Kansas	101,250	102,890
Total Mid-Continent area	1,602,793	1,547,564
Gulf Coast	153,971	157,071
Southwest Texas	63,038	64,079
Eastern	107,000	108,000
Rocky Mountain area	92,528	98,961
California—		
Santa Fe Springs	62,000	62,000
Long Beach	76,000	75,500
Playa Del Rey	25,500	24,500
Elwood	26,150	26,000
Kettleman Hills	78,000	67,000
Remainder of State	252,000	252,750
Total California	519,650	507,750
Total United States	2,538,980	2,483,425

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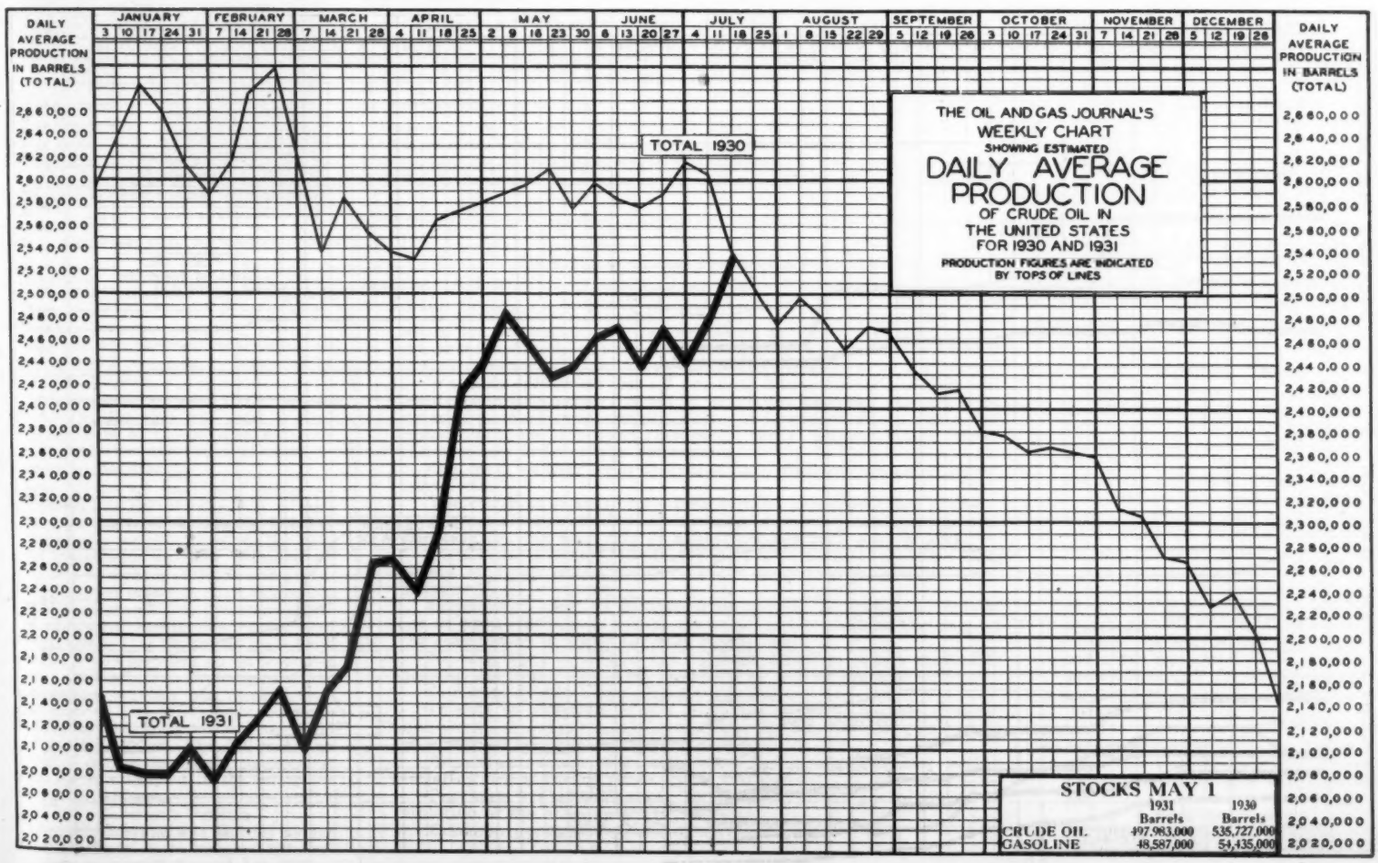

Gasoline Market Continues Strong

Oklahoma Quotations Hold Despite Crude Price Reductions. Latter Believed Temporary. Bright Stocks and Neutrals Lower

By C. O. Willson

The strength of the gasoline market was shown the past week when refinery tank car prices in Oklahoma and other Mid-Continent areas held despite another drastic reduction in posted crude oil price schedules.

The first assumption following the crude price reductions was that gasoline quotations which had shown a steady advance since late June would react and the refinery price improvement would be lost. However, it was soon apparent that most refiners were well taken care of with orders and were not in a position where they were forced to reflect in the price of their principal product, the unsettled condition of the crude oil market. Buying continues steady and in well informed market circles on Monday and Tuesday it was believed that present quotations might at least be maintained over the balance of the month.

Natural gasolines in Oklahoma also displayed strength and prices on all grades are one-eighth to one-fourth cent higher than they were a week ago. Although this market has not been favored with any single large purchases, the small buying has been steady and sufficient to absorb the available output.

In the remaining products of the Oklahoma refinery list it continues to be more of a buyer's than a seller's market. Kerosene is holding its own in prices although freely offered in competitive areas at lower quotations. Fuels are the "weak sister" of the refinery market, sellers having difficulty in moving their high cold test material regardless of price. Bright stocks and neutral prices were again reduced by several manufacturers during the week and prices on several motor oils have been shaded in spot purchases. Furnace oils and gas oils share in the general weakness of the fuel market.

REFINED MARKET BAROMETER

Reports from the several refining areas reflected mixed conditions. Gasoline prices continue to indicate weakness at most coastal points due to the dumping of gasoline coming from East Texas crude oils. At the same time the gasoline market at interior points continues fairly firm despite general reductions in crude oil prices. Kerosene demand slow with lower prices in some areas. Western lubricants continue to reflect weakness but scattered advances were reported in eastern oils. Important reductions effective in fuel oil material in several refining areas. Natural gasolines firm. Wax market inactive and prices lower in East.

Mid-Continent—Refinery gasoline prices firm in all areas except East Texas where prices were shaded first of week. Natural gasoline prices higher. Kerosene unchanged. Slow demand for all grades of fuel oil, gas oil and furnace oil. Bright stocks and neutral oil prices lower. Wax inactive.

East Coast—Gasoline market continues unsettled despite heavy seasonal demand. Prices on fuel oil and Diesel oil reduced. Gas oil quiet. Kerosene weak. Wax prices lower. Better demand for cylinder stocks.

Chicago—Gasoline prices steady. Kerosene dull. Slow demand for fuel oil and gas oil and prices lower. Lower prices for bright stocks and neutrals.

Gulf Coast—Fuel oil prices lower. No improvement in gasoline. Pale and red neutral prices lower.

Pennsylvania—Good demand for gasoline at firm prices. Kerosene slow. Best movement of year in bright stocks and neutral oils.

California—Gasoline market steady. Little new business in kerosene. Fuels firm.

Unusual Situation

An unusual situation has been created by the recent reductions in crude price schedules and it is predicted that so far as Oklahoma and Kansas are concerned the lower price schedules will be of short duration. The price reductions were adopted by most of the major buyers based on the contention that the low priced crude oil available in Texas made the action necessary. In the case of many major buyers with pipe line connections to all the larger fields in the Mid-Continent, there is very little difference in the value of crude oil of similar quality at the wells so that cheap crude oil available in one field tends to bring prices in all areas to the same levels.

In the present situation, however, the position of the small refiner is important. While the East Texas field with their 5 to 20-cent crude oil is the dominant factor among the major buyers, there are a large number of smaller buyers in all parts of the Mid-Continent who are in position to pay more than the posted schedules for crude supplies. The fact that crude oil is available as low as 5 to 10 cents per barrel in East Texas has no significance to operators of refineries which are not connected by pipe line to the field. The movement by tank car even over short distances generally absorbs any advantage in the market at the wells.

In brief, crude oil prices have slumped so low that the transportation charge from the well to the refinery and not the posted price at the wells is the important factor so far as refinery operations are concerned. Several refiners in Oklahoma and Kansas including some of the larger operators were anxious to obtain more oil before the last crude price reduction became effective. With heavy demand for gasoline they wished to increase their crude runs to stills to take care of their requirements and were willing to pay the posted prices of around 35 cents per barrel or more for crude oil.

The position of these refiners is obvious under the new price schedules. With crude oil averaging around 20 cents per barrel at the wells, these refiners are still obtaining practically the same prices for their refined products with an excellent outlook over the balance of the summer at least. This condition accounts for the fact that some of the smaller refiners have not met the new crude price schedule and apparently intend to continue to pay their producer connections, the former posted prices. Market observers do not believe that this condition can continue over any length of time. In Oklahoma and Kansas some

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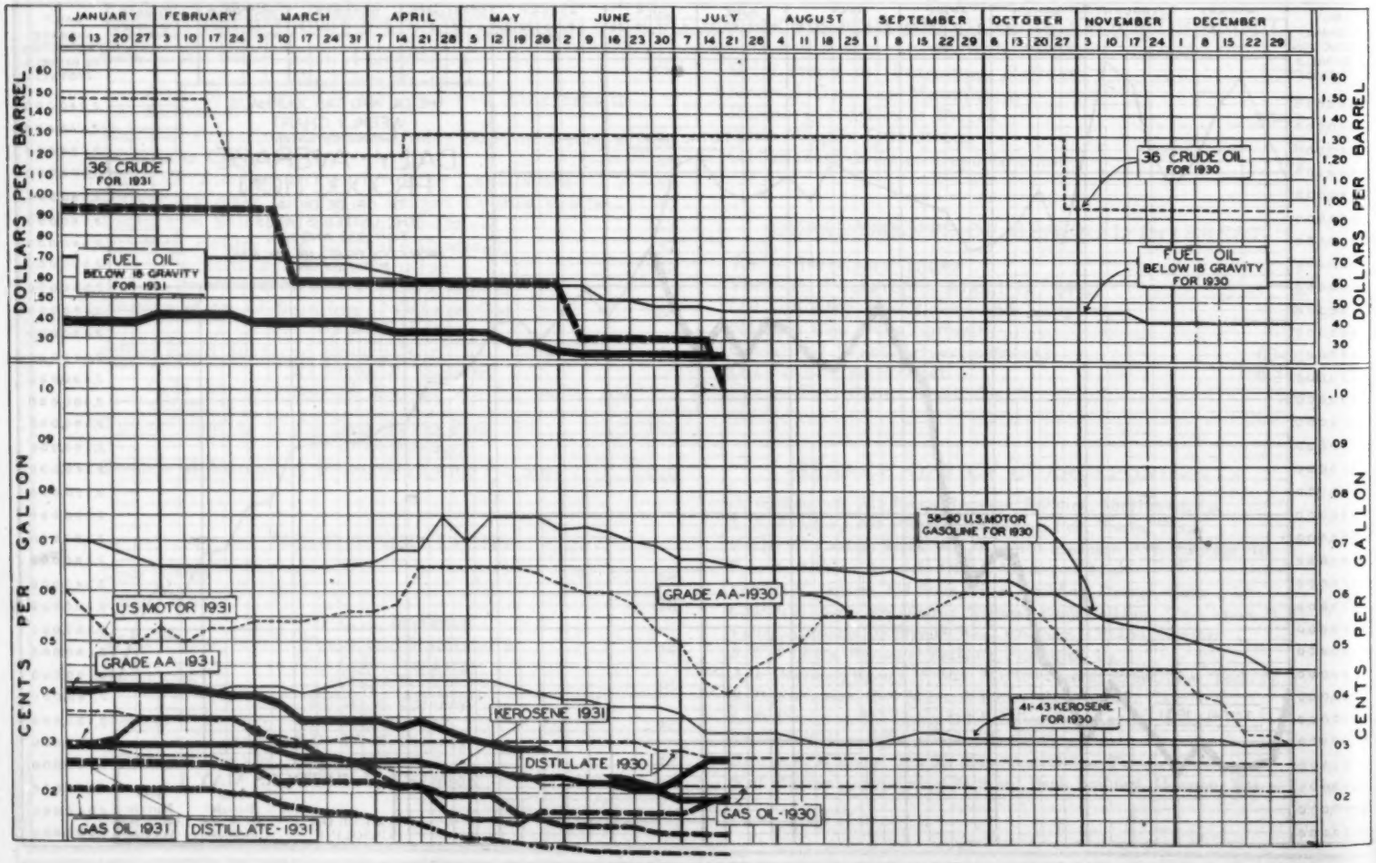

Texas Legislature for Conservation

Special Session Expected to Pass Law With Teeth, Although Oil Men Continue to Differ on Details of Bill

By Special Correspondent

AUSTIN, Tex., July 14.—The special session of the legislature called by Governor Ross S. Sterling to enact a conservation law that will curb East Texas overproduction of oil opened today with every promise of effective action although so far the varying views of the advocates of remedial legislation have not been harmonized.

The bill of the Texas oil emergency committee, prepared by Rhodes S. Baker, chairman, E. A. Landreth, J. D. Collett, C. F. Roeser, W. B. Hamilton, John Gholson, Beeman Strong, John Kilgore and E. R. Hardwicke, retains oil, gas and pipe lines with the Railroad Commission, not referring to any new state body which, if decided, is left to a separate bill.

Another bill, proposed by an East Texas bloc composed of Al Guiberson, Dan Moody, Carl Estes, Toddie Lee Wynn and others, calls for the setting up of a new state commission, not only

Governor Ross S. Sterling

transferring oil and gas from supervision of the Railroad Commission but taking away pipe lines, which the statutes now classify as common carriers.

Neither bill includes conservation of other natural resources, as suggested by Governor Sterling.

It is reported that some of the backers of the Cranfill plan will draft a third bill, sponsored by Claude Wild, executive vice president of the Texas Independent Petroleum Association.

The Texas oil emergency committee completed its bill Monday. It is patterned on the original Howsley bill, but seeks to give complete power to the Railroad Commission to make proration orders and to make it difficult and expensive to contest orders by court injunction.

The Guiberson-Moody bill would create an appointive conservation commission of six, selected on the zoning plan. Each district would represent an oil producing area. The governor would appoint the commission, selecting one member from each district from three names to be given him by the producers and the lease and royalty owners. This bill makes no effort to change the present conservation laws, as is attempted in the emergency committee measure.

Governor's Position

Governor Sterling said Monday he had not studied any of the proposed bills sufficiently to commit himself but did express disapproval of several of the proposed plans. The six-member commission plan, espoused by some East Texans, he said, would be unworkable and probably unconstitutional.

Another plan, to limit excess production by levying a heavy tax on oil produced from big wells also is unworkable, he said. A tax sufficiently heavy to accomplish this purpose would probably be held confiscatory, he said.

Responding to requests from Cicero Murray, chairman of the Oil States Advisory Committee, Governor Sterling said it would be impossible to shut down all wells in this State as is being done in Oklahoma and Kansas.

"I do not believe the Texas constitution would permit such action and if it would, the job would be a little too big," Governor Sterling said.

Provisions of Bill

The bill prepared by the emergency committee, re-defines waste and describes every kind of physical waste, including gas as well as oil, and also "in excess of the reasonable market demand for such commodities for current consumption or use within or outside the State of Texas, plus such amounts as are necessary for building up or maintaining reasonable reserves; waste incident to or resulting from any act of ommission in violation of any lawful rule, regulation or order of the railroad commission or of any order or judgment of any court of competent jurisdiction pertaining to the conservation of crude petroleum or natural gas." Storage of oil is permitted. Articles 6014 and 6008 are repealed. New definitions are substituted.

It is made the duty of the railroad commission periodically to investigate the production, storage and transportation of oil and gas "and of the market demand for current consumption," and power is accorded to regulate these to prevent waste. Power is given to require reports from concerns of other operations and also to examine their books.

On the commission's initiative or verified complaint it may, after giving notice, hold hearings and investigations as to waste and issue the necessary orders to stop them. It may modify or change its rules to prevent waste.

Power is given the commission to make "reduction or adjustment," in production and to prorate equitably throughout the State. This is a straight bestowal of power to order proration and the bill is specific in its description of that authority. It adds, "such market demand as so determined for each pool, area or district shall be apportioned ratably among all producers," in such areas. The commission is authorized to change such production orders after notice and hearing.

Expediting Appeals

Dissatisfied persons are permitted to bring suit to test the orders of the commission and these suits are given precedence on the docket over all other cases to be tried not later than 10 days after filing and, if postponed, it shall not be for more than 10 days, unless the court holds there is sufficient reason for further time. All suits against the commission must be brought in Travis County.

The burden of proof is placed on the plaintiff and the commission's orders shall prima facie be deemed valid unless proven invalid, and must be obeyed. It is made the duty of the commission to apply for an injunction to require the plaintiff to obey its orders during the pendency of suit unless a bond is given. Temporary restraining writs against commission orders are prohibited without notice and hearing to the commission, and a showing must be made of "irreparable damage" to obtain such writ after hearing.

Bond for Damages

This is followed by a requirement that the court exact a sufficient bond to in-

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TEXAS OIL EMERGENCY COMMITTEE APPROVES NEW ENFORCEMENT BILL

AUSTIN, Tex., July 14.—The state oil emergency committee overrode objections of Al Guiberson of the Carl Estes East Texas group and early Tuesday afternoon adopted the separate enforcement bill finished Monday by its legal subcommittee with only Guiberson voting against it.

The meeting then tabled a motion of Guiberson's to add to it a new section creating a six-member enforcement conservation appointed by the governor out of men nominated by the oil people.

The meeting adopted a resolution by R. S. Hardwicke, that the 100 oil men present "were not opposed" to creating a new commission by a separate bill, "but were unwilling to combine the commission with the enforcement plan."

W. L. Todd presided, with E. A. Landreth, secretary. District members of the operators' committee present included Rhodes S. Baker, Charles Brachfield, E. T. Moore and Malcolm Crim, East Texas; Gilbert Denman, Beeman Strong, Frank Zoch and Ike Kampman, South Texas; J. D. Collett, C. F. Roeser and R. E. Hardwicke, West Texas; John Kilgore, John Gholson and Joe Bridwell, North Texas; and Lawrence R. Hagy, Panhandle and Todd, Zoch, Roeser, Collett, W. A. Moncrief, E. L. Smith, Crim, W. D. Tucker and Landreth, executive committee.

Mr. Guiberson served notice that East Texas oil men would refuse to support the separate enforcement bill. He insisted oil men were not willing for enforcement to be "in the hands of political castoffs or the Railroad Commission."

Col. Lewis Thompson sponsored the ratification of the bill.

Gen. Jacob F. Wolters said The Texas Company supports it unless something better develops.

LEGISLATOR OFFERS USUAL RESOLUTION FOR INVESTIGATION

AUSTIN, Tex., July 14.—Before Gov. Ross S. Sterling's message calling attention to the crisis in the oil industry and asking conservation enactments had been read to the legislature Tuesday afternoon, Rep. Lee Satterwhite of Odessa got before the house a resolution to require the oil, gas and mining committee of the house and state affairs committee of the senate to conduct an extensive investigation into the condition of the oil industry.

TEETH PUT IN PROPOSED LAW

The conservation bill drafted by the Texas oil emergency committee for presentation to the legislature prohibits production, storage or transportation of oil or natural gas in such manner or amount or under such conditions as to constitute waste.

Waste is defined to include physical waste, operations that will reduce ultimate recovery of oil or gas, from improper use of gas or water in producing oil, surface waste, underground waste, extra fire hazards, production beyond reasonable market demand, waste due to violating any order of the commission.

Gas must be kept in well except on permit of the enforcement commission.

The commission shall determine demand and production limits.

After hearing, commission may order reduction or change in production from any well, ratably apportioned to each pool or area.

Suits against orders, filed only in Travis County, must be tried within 10 days; orders shall be valid until proven invalid. Complainant shall give bond.

Commission shall be entitled to injunction to require complainant to obey regulations during the suit, "and it shall be the duty of the commission to apply for such injunction."

No temporary injunction can be granted against orders until after hearing and proof that order is invalid or will do damage.

Commission may bring suits for penalties.

In case of violation after a court has adjudged a case, commission shall ask court to appoint receiver for the company, and court may appoint receiver to operate property.

Adjoining owners may bring suits for damages against person violating order during pendency of injunction.

Purchase, transportation or handling of oil or gas produced in violation of the orders shall be unlawful.

Common purchase law is not abridged.

Turbine Driven Rotary Mud Pump

Combination of Two Well Known Units Results in High Steam Efficiency and Ease of Operation, Indicating Other Possibilities

By L. G. E. Bignell
Petroleum Engineering Editor

In an article appearing in the July 17, 1930, issue of The Oil and Gas Journal, John T. Hayward, consulting engineer, Tulsa, outlined the possibilities of using a steam driven turbine to furnish the motive power for a slush pump for rotary drilling. Mr. Hayward pointed out some of the economies that might be effected by such a combination and since that time such an outfit has actually been assembled and put to practical test.

This article deals with some of the results of this test which was carried on at Magnolia Petroleum Corp.'s No. 1 Hoffman well in Section 16-21n-2w, about 7 miles west of Perry, Okla. The pump was built by the Prescott Co., Menominee, Mich., and the steam turbine by the Westinghouse Electric & Manufacturing Co., Pittsburgh, Pa.

The pump used was a Prescott 7"x20" straight line power slush pump driven by a 250 horsepower, 3,600 r.p.m. single stage, single velocity Westinghouse steam turbine. The pump had a speed of 46 r.p.m. and the reduction to this speed from the 3,600 r.p.m. turbine speed was accomplished through the use of a reduction gear unit mounted upon a common bedplate with the turbine which cut the speed to 900 r.p.m. and it was further reduced through the use of double reduction gears in the pump.

The pump is of the duplex type, the first set of reducing gears being spiral bevels, so that the driving shaft is parallel to the axis of the pump. This straight line design permitted the setting of the pump and turbine on a single compact set of skids without overhung or eccentric loading on either turbine or pump shafts.

The Installation

This outfit was installed at the No. 1 Hoffman well when a depth of about 3,700 feet had been reached and was used along with a 7½"x18" direct acting duplex steam pump to complete the hole to a total depth of 4,925 feet. The pumps were used alternately and in this way some direct comparisons were obtainable and this data was collected by engineers representing the American Society of Mechanical Engineers who will compile it in connection with another test run last spring upon a steam driven rotary rig in the Oklahoma City Field. It is expected that the combined report will be available by September and will be published in Mechanical Engineering, the official magazine of the A.S.M.E.

General Results

The steam turbine used on this test was developed by the engineering department of the Westinghouse Electric & Manufacturing Co. which has had many years experience in the design of small steam turbine units and it is of the single wheel impulse type. This design has proven to be the most efficient and satisfactory with respect to the utilization of the heat energy contained in the steam when applied to small turbines. Steam enters the turbine through a governor controlled inlet valve and passes into a nozzle where the heat energy of the steam is converted into velocity by expansion.

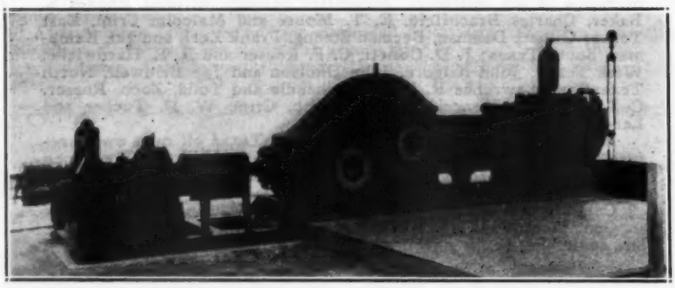
This steam at a high velocity impinges on the rotor blades, causing the wheel to revolve; consequently mechanical work is performed.

Since the turbine makes use of the steam expansively, it was found that it was possible to put about 50 per cent more pressure upon the fluid than was possible with the direct acting steam pump. Because of the fact that the starting and stalling torque of the turbine is twice the full speed torque, it was found possible on this test to build up mud pressures as high as 1,200 pounds per square inch when the turbine rotor was standing still. This pressure was secured with the steam from the boiler at a pressure of 230 pounds and it is estimated that with 250 pounds steam the mud pressure could be increased to as much as 1,500 pounds per square inch.

The Slush Pump

The slush pump used while applicable to any type of drive had been especially designed by the Prescott Co. for use with turbine drive, having in mind full utilization of all the favorable factors inherent in that type of prime mover. This made necessary design from the viewpoint of using to the utmost and automatically the special speed and torque characteristics of the turbine. It required also design based, not on the normal range of load, but on the stalled capacity of the turbine used, with its resultant effect on pressures. Conditions during the test run indicated clearly the successful solution of the complex design problem involved. The usual delay periods for compounding and the vexing and time consuming problems incident to sudden pressure increases were noticeably absent.

The ability to secure and maintain this high pressure on the mud stream going into the drill stem will be of advantage in working a plug out of the rotary bit at the bottom of the hole, or for cementing in the well against high rock pressures. It is stated that it is possible to hold this pressure developed by stalling the turbine rotor with the throttle wide open for any length of time desired and it was found on this test that any drop in pressure at the discharge end of the pump would be immediately compensated for by the turbine rotor moving forward enough to again build up the maximum pressure. This ability of the unit to maintain high, constant pressures on the mud stream has many advantages in rotary drilling and should be especially serviceable in re-establishing circulation around the drill stem if it should be stuck in the hole.



Steam turbine driven slush pump unit.

Another interesting feature of this Prescott turbine-slush pump hookup is due to the fact that the torque of the turbine shaft is increased as the speed of the rotor is slowed down and with plenty of reserve power and the ability of the unit to withstand overloading for short periods, it was found that when there was a tendency for pressures to build up in the drill stem or hole the pump would be able to increase its discharge pressure automatically and force the mud fluid through the obstruction. On several instances at the Perry test it was found that when the bit had become balled up and the mud did not flow freely the turbine outfit would quickly clear up the trouble because of its ability to build up discharge pressures rapidly.

This tendency to build up high fluid pressures at the pump discharge while using the steam turbine power is accomplished with relatively low boiler pressures for at the Perry test the boiler pressure did not at any time exceed 230 pounds per square inch, whereas it is reported that in the Oklahoma City Field boiler pressures up to as high as 350 pounds and in one instance as high as 400 pounds per square inch have been maintained.

It was also found that the Prescott outfit could be driven successfully with two 125 horsepower capacity steam boilers working at 230 pounds pressure, and the total gas consumed on the rig while this outfit was in operation was metered at the rate of approximately 300,000 feet per 24 hours.

Water Consumption

The water consumption was correspondingly lowered and it is estimated that about 600 bbls. per day was saved. These figures seem to indicate that with this type of slush pump outfit and size and number of boilers can be somewhat reduced for it has been found by past experience that the major portion of the power required for rotary drilling is consumed by the slush pumps and any saving to be effected in the operation of the slush pumps will permit of reduction in the size of the boiler plant.

Steam Condensers Not Used

On this trial installation no attempt was made to condense the exhaust from the turbine which might have been accomplished by introducing a small spray of cold water into the 12-inch exhaust line and catching the resulting condensates for return to the boilers. This is possible because the steam used in the turbine is not lubricated and there is no oil in the exhaust and it is quite possible to secure a good supply of scale free boiler feed water at almost any temperature up to the boiling point by the use of a cooling stream of water in the exhaust pipe from the turbine.

Where bad water alone is available for boiler plants this item might be of considerable importance and as the condensates can be secured oil free without any elaborate heat exchanger system or surface condensers it would be cheap to apply and simple in its operation. This advantage might also result in a smaller investment being necessary for water plants for a rotary well, and where operations are carried on on a large scale as they were in Oklahoma City any saving in water system would be appreciable when totaled throughout the entire drilling period.

The turbine does not require lubricated steam and this will be another item of saving and will amount to a reduction of several hundreds of gallons of lubricating oil per well and as this oil has a relatively high value per gallon the money saved will be a considerable amount.

One of the rather noticeable things that occurred at this test run near Perry, Okla., was the manner in which the drillers and helpers readily acquired the ability to operate the steam turbine outfit. After a few preliminary instructions as to the method of starting and stop-

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MERGER PLANS OF SINCLAIR APPEAR TO BE NEAR SUCCESSFUL CONCLUSION

LOS ANGELES, Calif., July 13.—Harry F. Sinclair, chairman of the board of the Sinclair Consolidated Oil Corp., arrived in Los Angeles late last week in connection with a proposed merger involving Sinclair, Rio Grande, Tide Water Associated and Sunset Pacific Oil companies. In a brief statement, Mr. Sinclair said: "We have always expected some time or other to come into California and you may say I am out here discussing a consolidation with the Rio Grande and Tide Water Associated Oil companies."

Mr. Sinclair pointed out, however, that while good progress has already been made and the outlook is favorable for a successful consummation of the pending deals, the companies involved have yet to agree upon a satisfactory trading basis. If the proposed mergers go through they will involve one hundred per cent consolidation and not merely the purchase of majority or controlling stock. He intimated that possibly the Rio Grande and Associated Oil companies will be united into a single unit to operate on the Pacific Coast unless legal difficulties interfere relative to the eastern part of the Sinclair consolidation program. His comment indicated that the Sinclair and Prairie merger may be successfully negotiated within the next few weeks.

It is presumed, although not verified, that the Sinclair proposal contemplates the formation of a large holding company which would control the Rio Grande and Associated interests in the West and the Sinclair and Prairie companies in the East. The Sunset Pacific Oil Co., although not considered as a separate entity, fits into the picture indirectly in as much as the Tide Water Associated recently acquired all of the outstanding bonds of this company and is in a position to take possession by foreclosure since interest on the bonds has been in default for a long time.

In Rio Grande, Sinclair will come into possession of a 50 per cent interest in a substantial portion of the Elwood Field of Santa Barbara County together with a refinery, pipe line facilities and distribution units in Southern California. In acquiring holdings of the Associated Oil Co., Sinclair consolidated will come into possession of well integrated units which includes two refineries in California and retail distribution throughout the Pacific Coast territory. Current production of Associated Oil Co. approximates 40,000 bbls. per day and the company has approximately an equal amount shut in. This is exclusive of Tide Water interests in the East.

Industry Must Drill 20,000 Wells Yearly

Wallace E. Pratt Says Producers Must Continue to Expend Half Billion Dollars Annually in Maintaining Assured Supply

By Wallace E. Pratt
Chief Geologist, Humble Oil & Refining Co.*

HIGH LIGHTS IN MR. PRATT'S ADDRESS

Recent phenomenal success in discovery of oil is due, as a matter of fact, largely to the momentum which oil-finding activity acquired from the stimulus of the war, 15 years ago. The search inaugurated at that time has only within the last five years become really effective.

Our search cannot safely be suspended. There is no suggestion of an oversupply in sight. Our trouble is that we insist on producing tomorrow's oil today, regardless of the current demand. Our reserves are far from imposing measured against our assured future requirements.

Our normal requirements, even without further increase, will exhaust the reserve within about ten years. It cannot be produced so fast. If we are to meet the certain demand for oil we must not fail to find a minimum of a billion barrels of oil per year: ten major fields of average size annually.

The world's petroleum reserve outside the United States is more adequate for the world's needs outside the United States than our domestic reserve is for our domestic needs.

To find and produce the volume of oil required by this nation each year we must drill on the average some 20,000 wells. One thing is certain: we will not find oil if we do not drill the wells.

Our drilling record for 1930 is far below this average and for 1931, so far, is far lower still. Our requirements for oil demand that we spend each year for drilling alone $500,000,000, that we explore and condemn by drilling some 3,000,000 acres of prospective oil land to a depth exceeding on the average 3,000 feet, and that we explore and prove for production each year some 50,000 acres of oil land.

To do this we must keep our ratio of dry holes down to one in four, yet we are drilling one dry hole out of each three wells a great deal of the time and over much of our hunting grounds.

It is generally asserted and, I think, generally conceded that geologists have become so proficient at their profession of petroleum finding that we are now drowning in the sea of oil they have found and caused to pour over us. It is a favorite witticism that the problems of the oil industry could best be solved by putting all the geologists on a large boat and sending them on a long vacation out on the high sea—then sinking the boat. The flood of oil from which we suffer is generally credited to the skill of the geologist, and executives generally seem to feel that geologists can make new discoveries, if not at will, at least in such number and time as to meet adequately our most extravagant demands. Many companies have fired their geologists, apparently having concluded that they can safely be dispensed with, at least for the time being. Many geologists appear to doubt whether their services are ever to be sought again in oil finding and, accordingly, are turning to other occupations.

Wallace E. Pratt

What are the facts in this connection? What does an analysis of the situation reveal that a geologist can use as a guide to his individual or company policy? Let us make a brief survey of the field of oil finding.

How Much Oil Has Been Found

Prior to 1917 and over a 60-year period there was produced in the United States about 4,000,000,000 bbls. of oil. At the end of that period there was a known underground reserve of about 1,000,000,000 bbls. Since 1917, the United States has produced (through 1930) about 9,000,000,000 bbls. of oil and there is a known underground reserve in the United States today of the order of magnitude of 10,000,000,000 bbls. The ultimate production from our discoveries during the period 1917-1930, inclusive, therefore, will be 13,000,000,000 bbls. Our total national production through 1930 is about 13,000,000,000 bbls. and our total discoveries in the United States so far are about 23,000,000,000 bbls. of oil.

Where the Oil Has Been Found

The following table shows by principal states where the nation has got its oil in the past, and, by inference it shows also that which is of more moment to us now, namely, where it must look for its future supply:

(Millions of Barrels)
(Through 1930)

States—	Total finds	Total production	Known underground reserves
Oklahoma	4,100	3,100	1,000
California	7,000	3,500	3,500
Texas	5,900	2,400	3,500
All others	6,000	4,000	2,000
Total	23,000	13,000	10,000

Rate Oil Is Being Found Currently

Of some 13,000,000,000 bbls. found during the past 10 years, more than 9,000,000,000 bbls. were uncovered during the past 5 years. In California, out of some 4,500,000,000 bbls. found in the past 10 years, 3,000,000,000 bbls. were found in the last 5 years. In Texas, of 5,000,000,000 bbls. for the 10-year period, 4,000,000,000 bbls. were found in the last 5 years. In Oklahoma, out of 1,750,000,000 bbls. discovered in the last 10 years, 1,250,000,000 bbls. were found in the last 5 years, and for the rest of the nation, out of discoveries aggregating 1,500,000,000 bbls. in the past 10 years, practically 1,000,000,000 bbls. was found during the last 5 years. In general then, our finding rate has nearly doubled during the last 5 years. In Texas, it has been multiplied by four.

Oklahoma has produced oil more rapidly than she has found it over the past 10 years. Her production exceeds her discoveries by 300,000,000 bbls., or nearly 20 per cent. California and Texas on the other hand have each only produced two-thirds as much oil as they found during the past 10 years.

How This Oil Was Found

It is obvious from the foregoing data that oil finding has improved—the discovery rate has been accelerated greatly over the period since the great war. But this is also, of course, precisely the period during which the geologist came effectively to grips with the finding problem in the petroleum industry. It is inconceivable that the coincidence of success in finding and adoption of geologic methods should be only a coincidence without significance as to the efficacy of geologic effort, and the most perfunctory inquiry reveals immediately that the relationship is largely one of cause and effect. Geologists do find oil. Why shouldn't they? The problem is largely geologic. The principles of oil accumulation are clearly determined and many of the factors of control can be detected by ordinary geologic methods.

As a matter of fact 80 per cent of the discoveries that enable us to set up 10,000,000,000 bbls. of underground reserves today resulted directly from geologic or geophysic recommendations as to location and depth of tests. It happens that several very large fields have developed from discoveries that were accidental, or, at any rate, are not directly the result of geologic recommendation, so that only something more than 50 per cent of the volume of our oil reserves can be credited to geologists. Even so, the record is entirely gratifying to geologists.

Fortuitous Finding

Nevertheless, there is much of the fortuitous in oil finding. When tremendous fields like Greater Seminole and the new East Texas Field can develop without being more clearly or generally anticipated by geologists than these fields were, it behooves the geologist to speak with some degree of humility. Much of our control is obscure, and even keen observers fail to detect or to interpret correctly the surface evidence. The Mexia Field was discovered by a geologist, but the discovery well was located on what was conceived to be an anticline, when in reality, of course, the controlling structure is a fault. That the first well discovered oil was largely good fortune. The Hobbs Field was drilled at the apparent center of a geophysical prospect, and the first well made oil, but the crest of the reservoir later proved to be more than a mile distant and much of the prolific field that developed lay outside the block of leases taken on the geophysical evidence. Reflect, also, on the hundreds of domes, anticlines, faults and geophysical prospects that we drill without success. Most of them look like certain oil fields to some geologist before the well gets down.

Other Discovery Factors

Other factors than the geologist, it must be admitted, play a large part in oil finding. One potent agency in discovery is our modern drilling technique. It is not that we drill more wells, because we actually drill fewer wells. The number of completions for 1930 is less than the number for 1919, and the year 1929 boasted fewer wells than the year 1920. But improved methods of testing and the ability to go to greater depths have contributed much to oil finding over the last decade. Improved production methods have also assisted in the problem of oil supply. Our average per acre yields have increased compared with the records of old fields, and this undoubtedly is due to improvement in producing practice.

Curiously enough, one of the most effective factors in our success at increasing oil supply is so obscure as to remain unexplained. I refer to the large size of a number of the recently discovered fields. Where in the records of the previous decade can you match Yates, Hobbs, Van, East Texas, Kettleman Hills, Greater Seminole, and Oklahoma City, as to volume of recovery from a single field. The extraordinary size of many of the individual fields recently discovered is not readily accounted for. It is not the geologist alone; some of the largest fields are not geologic discoveries. It is not deeper drilling alone; some of the largest fields are relatively shallow. But, whatever the cause, we do have large potentials for our newer fields.

Have More Geology Today

A number of factors, doubtless, have combined to increase our success at oil finding, but the most effective agency in accelerating the rate at which we find oil, in my opinion, is the general realization throughout the producing industry that the rules of the game are written in the science of geology and the wide understanding of fundamental geologic concepts as applied to the occurrence of petroleum that has come to prevail among oil producers as a class. It is not so much that we have more and better petroleum geologists today that enables us to find more oil, as it is that we have more geology and that we have it more generally disseminated. It is not so much that we have many men of geologic training in positions outside the geologic department, although this fact is important. But executives, engineers, superintendents, drillers; all these and others think and work more soundly in the task of finding oil because all of them have come to think geologically. Very few of them realize that they think in terms of geology or that they use geologic concepts in their work, and nearly all of them would resent it if we were to prove it to them, but the fact remains, nevertheless. This tendency is potent in helping to find oil.

Situation Summarized

To summarize the situation in oil finding, then, it may be said that, with a current demand of the order of 900,000,000 bbls. a year, we have found over the past 14 years nearly 1,300,000,000 bbls. annually. Our finding rate has risen until the average for the past five years is nearly 2,000,000,000 bbls. per year. As a result we have not only supplied our current requirements, but we have built up an underground reserve of 10,000,000,000 bbls. in addition to our aboveground storage of more than 600,000,000 bbls. This total supply, it is generally contended, is a sufficient guarantee against any future shortage. More than this, it constitutes an intolerable

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*Before San Antonio, Tex., section American Association of Petroleum Geologists.

Crack Crude Direct With Dubbs Unit

New Operation With East Texas Crude Oil Gives Increased Yields of Gasoline of Higher Octane Number

By E. F. Nelson and Gustav Egloff
Universal Oil Products Co.

The latest development in cracking is not to be confused with the cracking of heavy crudes which contain little or no gasoline obtainable by straight distillation. It is designed to take crude oils of high gasoline content and crack them directly into high yields of antiknock gasoline, eliminating the skimming operation altogther and thereby also cutting out altogether the production of unwanted straightrun gasoline.

The new operation is not to be regarded as in any way similar to the simultaneous skimming and cracking operations carried on in some refineries, whereby waste heat from the cracking process is used to distill the straightrun gasoline from the crude. In such operations the cracking and the straightrun gasolines usually have been collected separately.

Some experimental work in the cracking of crude oils was done many years ago, but years ago the industry generally believed that straightrun gasoline was the best fuel and that it would be degraded by the admixture of cracked gasoline. This militated against adoption of any system for cracking crude oil that would have produced a combined cracked and straightrun gasoline.

Two other beliefs also stood in the way of the practical cracking of light gasoline crude.

These were first, that such cracking of light crude must occasion a prohibitive fixed gas loss, and, second, that it was uneconomical to use relatively costly equipment, such as a cracking unit, for a relatively "cheap" and simple job, such as the skimming of crude oil.

The knock in automobile engines at that time was not the problem it is today with high compression engines, and antiknock motor fuel was in small demand.

The new process of direct cracking of light crude oil was compared carefully with the other three methods used in refining oil to make gasoline. These are:

1. Skimming the crude and cracking the topped crude without blending the resulting gasolines, but marketing them separately.

2. Skimming the crude, cracking the topped crude and blending the resulting cracked gasoline with the straightrun product.

3. Skimming the crude, cracking the straightrun gasoline or naphtha, cracking the topped crude and blending the two gasolines.

The new system was found to give better results than any of the above methods in that it gives the largest yield of gasoline of the highest octane number.

Three other important advantages of the new operation are, first, that it calls for an investment of the order of one-third less for a unit of given capacity than that required to carry out the more conventional operations; second, it gives a considerably better throughput for a unit of given size than is obtained by other methods; third, it saves fuel and cuts labor costs.

The increase in throughput capacity of a given unit by cracking crude oil direct, as compared with cracking topped crude, depends, of course, upon the gasoline content of the crude cracked.

It is roughly estimated that a unit with a capacity for cracking 1,000 bbls. a day of topped crude would handle around 1,300 bbls. a day of crude containing naturally 35 or 40 per cent of gasoline.

Any refiner can readily figure the savings on tankage, fuel, labor and maintenance, and the other advantages possible to obtain by the new method. The following table shows the results of cracking tests. The following were cracked:

1. Joiner crude oil.
2. Topped Joiner crude, blending the straightrun with the cracked gasoline.
3. Straightrun gasoline and Joiner topped crude and blending the two cracked gasolines.

ADVANTAGES OF CRACKING CRUDE OIL ENTIRE

	Cracking crude oil	Cracking topped crude, blending with straightrun	Cracking topped crude, cracking straightrun, blending the gasolines
Gasoline, %	70.9	70.9	66.4
Octane number .	70	66	72
Flashed residue, %	22.0	23.5	24.5
Gas and loss, % ..	7.1	5.6	9.1

Antiknock value is particularly important in gasoline which is to be blended with Ethyl fluid for sale as Ethyl Gasoline. The higher the antiknock value of the gasoline the smaller quantity of tetraethyl lead will be needed to bring the gasoline to Ethyl standard.

The importance of adding a few points of octane number in the range between 66 and 74, as compared, say, with adding it between 52 and 56, is shown in the accompanying graph.

Any given octane number can be converted to the corresponding "lead" requirement by the use of the curve. This curve shows the relation between octane number and tetraethyl lead requirement.

For example: 74 octane number requires no tetraethyl lead because the gasoline is equal to Ethyl standard.

Similarly, 55 octane number represents a gasoline that requires 3 cc. of Ethyl fluid to bring it to the Ethyl standard.

In using this curve it should be appreciated that the relationship varies somewhat with gasolines from different crudes due to different lead susceptibility, but this curve gives an approximation which serves most purposes.

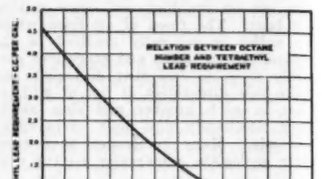
Considerable experimental work has been done, and more is in progress, on direct cracking of other crudes of various types. The results of this work will be reported in later papers. Joiner crude was selected for the primary work because of the great interest it possesses right now for the entire industry.

Mode of Operation

The method of operating the process to crack crude oil is illustrated in the drawing, a description of which follows:

The crude oil from storage is pumped through heat exchanger if desired to the heating coil together with hot reflux condensate which is drawn continuously from the bottom of the fractionating column.

The heated hydrocarbon material dis-


RELATION BETWEEN OCTANE NUMBER AND TETRAETHYL LEAD REQUIREMENT
TETRAETHYL LEAD REQUIREMENT—CC. PER GAL.
OCTANE NUMBER

charges into a vertical reaction chamber, maintained under pressure, and then passes into a flash chamber held at lower pressure. The cracked vapors leave the top of the flash chamber passing into a fractionating tower. The cracked residue is continuously drawn from the bottom of the flash chamber, passing through a residuum cooler to storage.

In the fractionator, separation takes place into gasoline vapors and reflux condensate.

The reflux condensate from the bottom of the fractionating tower is returned to heating coil for further treatment together with the crude oil charging stock, as described above.

The gasoline vapors flow from the top of the fractionating tower, thence through a condenser coil and finally into a distillate receiving vessel.

The incondensable gas passes from the top of the receiver to a scrubbing system for the recovery of its gasoline content. The endpoint gasoline is simultaneously discharged from the bottom of the distillate receiver flowing to a storage tank.

Cracking of Joiner Crude Oil

The Joiner crude from East Central Texas contained 35.7 per cent, 400° F. endpoint gasoline of 56 octane number.

(Continued on Page 33)

IS SKIMMING TO BECOME OBSOLETE?

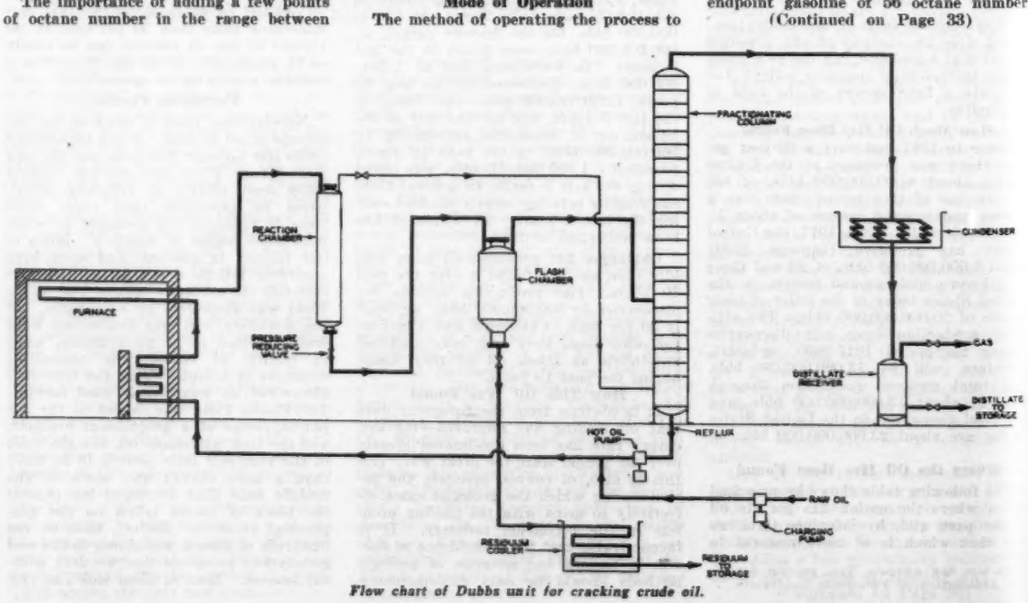
In this paper the authors who for years have been connected with the research and development department of one of the largest cracking processes, describe a new application in which a high gravity crude oil is charged direct to a cracking unit to secure a large yield of gasoline with an exceptionally high antiknock rating. Regarding the significance of this development the authors state:

"Cracking units will be the only major equipment to be found in the up-to-date gasoline producing refinery of the near future.

"The growing demand for cracked gasoline and the increasing difficulty of selling straightrun, except at a price concession, are pushing the refiner in this direction and bringing about radical changes in refining practice. The reason why cracked gasoline is finding ever more favor in the eyes of the motoring public is that it possesses antiknock value superior to straightrun.

"For several years the importance of antiknock value has been growing in the public mind, and today it is the paramount quality demand in gasoline, reasonable volatility being taken for granted.

"By means of an improvement in the refining art, that is the cracking of crude oil direct, the refiner is able to obtain in his cracked gasoline a higher antiknock value than is possible by other methods without sacrificing his yield—possibly even increasing it."



Flow chart of Dubbs unit for cracking crude oil.

Various Pumps for Pipe Line Duties

Proper Care in Handling and Operation of Vital Importance. Suggestions Offered to Oil Line Pump Operators

By W. J. Denholm
Engineer, Worthington Pump & Machinery Corp.

Reciprocating pumps cast in bronze, with suction and discharge valves resembling those now in use, were known in Europe at least 2,000 years ago. While we marvel at the progress made in practically every human activity since that time, we should not lose sight of the fact that a pump, so complete in its principles and action that it serves mankind in much the same form today, was produced before the Christian era.

When the need arose for the transportation of oil through pipe lines, the thoroughly practicable (although not diversified) machinery that was available was pressed into service. This employment of the means at hand quickly provided resources for the ever-increasing development and typically American growth of the vast petroleum industry. In the United States this industry had its inception at a time when steam was the universal prime mover. Consequently, any study of pipe line economics was limited in the choice of machinery.

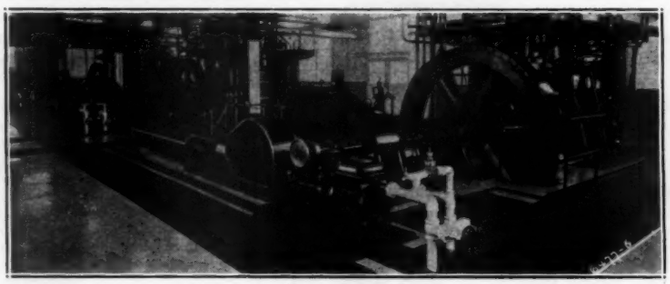
Steam-operated pumps have one important characteristic—they possess flexibility of speed and, therefore, of capacity and pressure. This was particularly valuable in the early development of the oil pipe line when knowledge was limited, and rule-of-thumb methods combined with common sense served in lieu of highly specialized engineering training.

Although inside-packed double-acting pumps of the piston and rod type are found in some fields, the oil line pumps in most general use, however, are outside packed single or double acting. Steam reciprocating pumps for pipe lines preferably have a long slow stroke as this minimizes shock, pulsation, vibration and wear. Pressures exceeding 1,000 pounds per square inch are employed, and such pumps are substantially equivalent to those long in use in the hydraulic field.

As the capacity range for pipe lines increased and greater economies became necessary, compound, triple expansion, direct or geared crank and flywheel high duty engines were used. However, this equipment is large and comparatively expensive for specific ratings.

Wide Choice of Prime Movers

Three other power sources now in a high state of perfection—gas engines, electric motors and heavy oil engines—offer further economies. This wide choice of prime movers makes it possible for engineers to lay pipe lines practically any place in the world. Any consideration of the best type of combined prime mover and pump for a specific pipe line service today involves a study of the accumulated knowledge of the entire field. In a broad sense, all types are fully developed and reliable and the final decision largely will be based on the greatest return for the money expended. Factors to be considered are many: Size and location of the field; grade of oil; quantity to be pumped; water supply; territory to be covered; total mileage; labor; etc. Reference to the age of reciprocating pumps was made in the opening paragraph. Although the action is the same today as it was 20 centuries ago, the modern pipe line pump with its many refinements in design combines engineering skill with the highest grade materials. This has made it possible to increase the pump speed and to insure reliable operation with less weight and bulk.

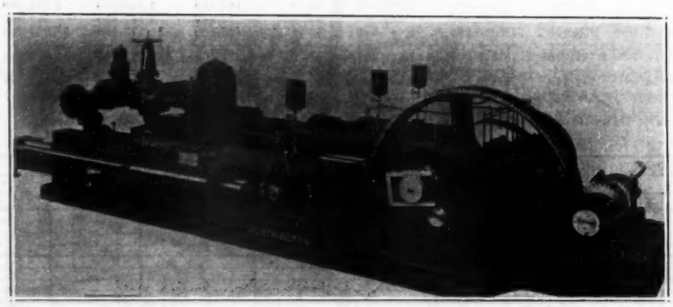


Diesel engine operated horizontal oil pipe line pump.

As the men whose responsibility it is to operate and maintain them always are interested in the mechanical principles of pipe line pumps, a few details regarding their operation may be of interest. Displacement pumps of the piston or plunger type, with suction and discharge valves, operate by the filling and emptying of the chambers as the plungers reciprocate. The discharge valve opens with the movement of the plunger and, due to its weight and the pressure on its upper side, closes as it comes to rest. The suction valve action is the same although, frequently, the pressure difference between the upper and lower sides of the valve (which causes it to lift) is obtained when the pressure in the pump chamber is lower than that of the atmosphere.

Valves and Air Vessels

The valves may be single or multiple, and their area should be such that their lift is reasonably small. This is important to the smooth operation of the pump as the valves must open and close quickly, without shock, for the best results. In most instances, both suction and discharge valve springs are necessary to assist in efficient operation. The lift and area of the suction valve normally is slightly greater than that of the discharge valve. Although it may appear to be restricted, the velocity imposed on the oil even when the pressure difference across the suction valve is limited, is sufficient to fill the chambers and the valve opens only the amount necessary to accomplish this result.



Horizontal triplex power operated oil line pump.

Before a reciprocating pump will operate, the suction line and the pump itself must be freed of air and gases. There are installations where the "petting" of air valves on the valve chambers will allow the pump to relieve itself—a head on the suction side of the pump forcing the air from it. When necessary, external means for relieving and excluding air and gases must be adopted. Practically all reciprocating pumps show improved operation when fitted with air vessels and, frequently, arrangements must be made to keep these charged.

There are several reasons why reciprocating pumps will fail to deliver oil, among them: Accumulation of air and gas; obstructions under the valves; and the condition of the valves themselves. In the latter instance, the valves should be reseated before they are beyond repair.

Stuffing boxes should be packed with approved material which will not groove the plungers. Tightening of the gland should be done slowly and evenly and only when absolutely necessary. Much power can be lost if this operation is not intelligently performed.

Oil pipe line pumps should be kept clean and neat. A good indication of the internal condition of the pump can be obtained by observing the amount of care expended on its exterior.

Chromium plating now is established on a commercial basis for the coating of almost any part of a machine where wear and weather resisting properties are important. It is used to protect certain parts of pumps which handle corrosive liquids that formerly could be pumped only with difficulty and at great expense. For certain oil pumping duties, chromium plating must be regarded as the most recent outstanding contribution to this field of engineering. Typical parts so plated for pumps are rods, plungers and liners.

Centrifugal Pumps

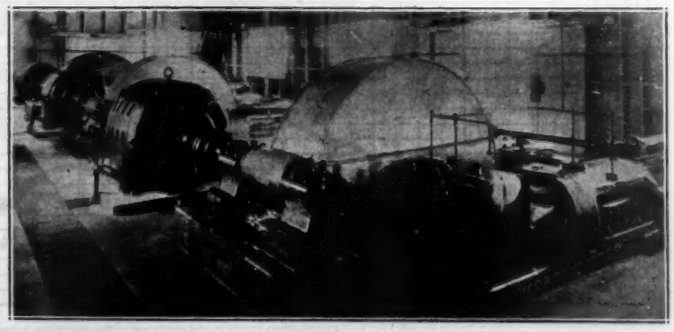
We have been accustomed to regard oil line reciprocating pumps as machines somewhat elementary in principle but highly efficient when compared with centrifugal pumps. Today, the centrifugal pump is a machine about which there is considerable difference of opinion among the best hydraulic engineers. This disagreement relates to the soundest methods which may be applied to the study of a problem which continually presents new and hitherto little understood principles. In recent years, however, outstanding progress in the development of high efficiency centrifugal pumps has placed them on a par with reciprocating pumps for oil pipe line service.

Among the points which may be enumerated in favor of centrifugal pumps are: Low first cost of station and installation, especially if motor driven; steady and constant flow; and ease of control, whether remote or local.

Centrifugal pumps are regarded by many as somewhat mysterious and, if high speed, are treated with considerable respect not unmixed with fear. It is necessary, therefore, to consider the available supply of trained operators and the possibility of men accustomed to handling reciprocating pumps being placed in

(Continued on Page 36)

Oil pipe line centrifugal pumping station.



Motor operated horizontal oil pipe line pump.

Higher Prices Will Be Announced Soon

Companies Becoming Worried Over Future Requirements Following Shutdown Agitation. Present Schedule Is Ridiculous

By Andrew M. Rowley

Reduction of crude oil prices during the past week to the lowest point in the history of the petroleum industry is believed to mark the turning point in the situation with improvement expected from this time. Oil men, bankers affiliated with the oil business and others in close touch with conditions are beginning to predict $1 crude by Christmas.

Movements being inaugurated in different fields to shut in wells undoubtedly will bring higher prices very quickly if production is curtailed along the lines indicated. The effect of such shutting in of wells will be shown this week in the production figures for the nation as a whole as the Oklahoma City Field is expected to register an average daily decline of about 100,000 bbls. Kansas operators are endeavoring to get action on a movement to close in 22,000 wells. The output of pools in North and West Texas and elsewhere probably will be curtailed to a considerable total as a whole until crude oil prices are increased.

The shut-in movement appears to be the most effective weapon developed to bring back higher prices. Many companies already are seriously considering their future crude oil requirements and becoming somewhat apprehensive as to whether they will be able to obtain the oil they need. Several large companies are reported to be anxious to make new crude oil connections since the agitation for a shutdown of producing wells became active. That these companies really are apprehensive is indicated by the fact they are reported to be using airplanes to speed movements of their men from one section to another in efforts to assure connections for future requirements should the shutdown movement in certain fields become effective.

If these companies are worried about future requirements of crude oil it is certain present low prices cannot long continue. A number of smaller companies have found it advisable to continue paying the price in effect before the most recent decrease was announced. The smaller companies have difficulty at times getting all the crude they require and should an extensive shutdown movement be inaugurated, it is entirely probable these smaller companies would be forced to pay premiums for the oil they need.

In addition to closing in producing wells some companies who have been selling some of their stored oil have closed the gate valves of their tanks and refused to sell any more crude at present prices. Early this week it was felt this condition would spread and there was little doubt such possible action had the officials of a number of companies worried.

Present prices for crude oil are ridiculous. One year ago the price of 36 gravity crude in the Mid-Continent area was $1.29. Now it is 18 cents. Production last week was about the same as for the similar week of last year but total production thus far this year has been about 45,000,000 bbls. less than during the similar period of last year. Domestic consumption this year is about the same as last year.

Operators are not justified in producing crude oil at a loss and present prices prevent any other result. Companies are not justified in selling stored crude oil at present prices for such sales represent a greater loss than those incurred in producing their wells now.

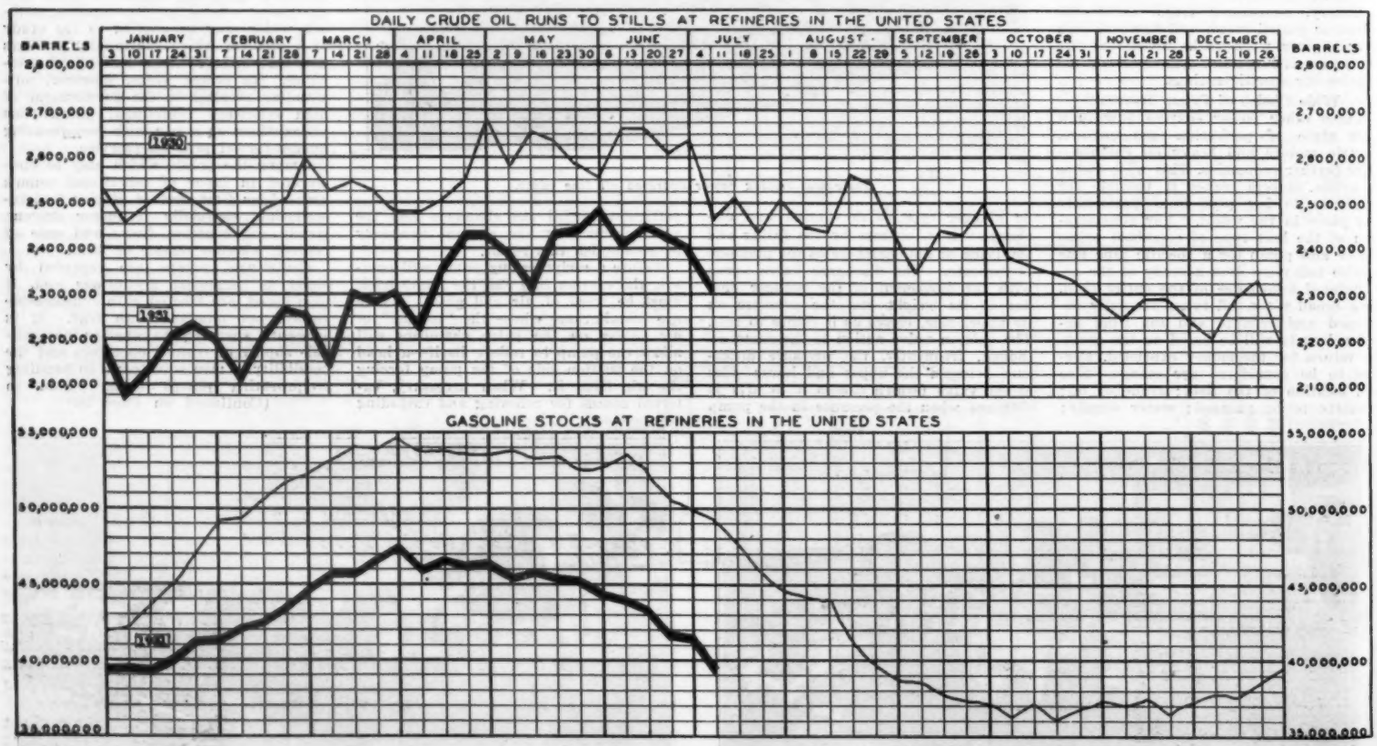
One thing is certain. Higher prices will come very quickly if production is shut in and if companies who have been selling crude refuse to sell any more until reasonable prices are established.

AMERICAN PETROLEUM INSTITUTE WEEKLY REFINERY STATISTICS

The weekly report made to the American Petroleum Institute on refinery statistics—crude runs to still, gasoline stocks and gas and fuel oil stocks in barrels—for the week ending July 11.

	Week ending July 11				Week ending July 4				Week ending July 12, 1930			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
East Coast	100.0	487,300	6,764,000	9,870,000	100 0	459,300	7,134,000	9,587,000	100.0	475,000	7,743,000	9,361,000
Appalachian	91.8	83,900	1,374,000	1,250,000	91 8	86,400	1,479,000	1,202,000	91.8	82,900	1,589,000	924,000
Indiana, Illinois, Kentucky	96.6	297,700	5,852,000	3,301,000	96 6	307,600	6,094,000	3,804,000	99.6	317,400	7,525,000	4,267,000
Oklahoma, Kansas, Missouri	89 6	312,300	2,755,000	5,016,000	89 6	273,900	2,876,000	4,834,000	89.9	278,600	4,139,000	4,785,000
Texas	91.3	516,000	7,156,000	10,704,000	91.3	523,100	7,262,000	10,405,000	90.4	544,900	6,982,000	10,462,000
Louisiana and Arkansas	98 9	195,100	1,343,000	2,703,000	98 9	165,900	1,360,000	2,745,000	96.8	176,100	2,191,000	1,834,000
Rocky Mountain	89 3	53,900	1,753,000	849,000	89 3	42,400	1,766,000	853,000	93.6	62,400	2,623,000	1,199,000
California	96 7	457,800	11,345,000	98,443,000	96.6	466,100	11,727,000	97,937,000	99.3	573,700	14,650,000	106,253,000
Total United States	94.6	2,404,000	38,342,000	132,636,000	94.7	2,324,700	39,698,000	131,367,000	95.7	2,511,000	47,792,000	139,085,000
Texas Gulf Coast	99 8	381,600	6,029,000	7,642,000	99 8	418,700	6,118,000	7,401,000	100.0	397,600	5,860,000	7,463,000
Louisiana Gulf Coast	100.0	137,700	1,229,000	1,755,000	100.0	114,100	1,266,000	1,839,000	100.0	117,400	1,812,000	1,011,000

(1) Per cent refinery capacity represented. (2) Daily crude runs to stills. (3) Gasoline stocks. (4) Gas and fuel oil stocks.



Data for 1931 based on weekly reports of the American Petroleum Institute. Figures for last week not shown in graph but are included in above tables.

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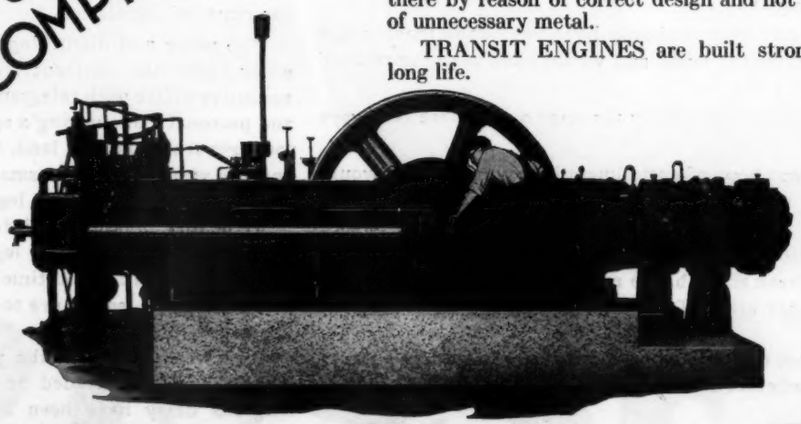

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DOLLARS FOR NICKELS

The oil business is in an impossible condition, a condition that cannot possibly continue. It's like selling dollars for nickels.

There is a limit to such folly, the limit of exhaustion; and while 50,000 barrels may be sold at 2½ cents a barrel there cannot be much more at that price or anything like that price.

A price range from 10 to 22 cents, with the average Mid-Continent crude going around 18 cents a barrel, is not much better from the practical standpoint because only those who must have the money will sell at that price except for an emergency period.

The talk of a shutdown is significant of what oil men are thinking and it is a hopeful sign that there is at last such widespread realization of the wastefulness of overproduction.

It seems to have taken some such wholesale price slaughter to bring it home to everybody.

Now it is being said that it should have been done months ago but this is wisdom after the event and would have been impracticable at the time.

The moderate course is generally the wise one. There is always danger in extremes.

So long as there was hope of curtailment by co-operation it would have been wasteful to depress values and incur unnecessary loss. Instead of blaming proration for the present condition it should be praised for averting this situation until this late day.

Had East Texas been amenable to reason we would not have had 2½-cent, 6 and 10-cent oil in Texas and corresponding reductions everywhere else.

Another thing that this crisis is teaching is the spreading effect of overproduction, whether it be of crude oil or of gasoline or any product.

As East Texas crude and products lessened the market or entered into competition with other districts prices were forced down and we heard less of the familiar protests in other periods of overproduction that prices should be maintained in other areas.

Today, as never before, the whole industry, the country over, is seeing clearly both the cost of overproduction and the unlimited sweep of its disastrous effects.

Even imports, held responsible for so much of the industry's troubles last year, are now kept down by the economic barrier of cheaper competitive oil at home.

Now, as to what can be done about it.

It cannot go on as it is because the industry cannot stand it. The effects would be so disastrous not only upon the oil business but upon business generally that there would be a demand for regulation in the public interest.

In Oklahoma, Kansas and California the industry has been fortunate in securing the co-operation of the state governments and popular opinion on curtailment programs.

Texas, after having gone along on curtailment in West Texas and other sections, aided by recognition of the danger from water intrusion, has been dilatory in effective action in East Texas.

The law was challenged and impeded so that in effect the State was powerless to check the overproduction which was overwhelming the industry in Texas and throughout the country.

Voluntary co-operation, on any plan, appeared impossible. Differences of opinion, based largely on prejudices or self interest, prevented a sober view of the facts and their relation to the general situation.

A legislative session called under such circumstances would simply have transferred the controversy from the field to Austin with the risk that legislation might have been enacted that would have made matters worse.

It has required patience and judgment to await the slow working out of cause and effect so that all could see it. The price situation that resulted was due not to reductions in the posted prices but to actual transactions that disregarded all postings.

It was that development and the competitive availability of East Texas crude and products that forced the sweeping reductions everywhere which have brought the industry the lowest prices in its history.

The result is summarized in Governor Sterling's message to the Texas legislature:

"The oil industry, one of the State's principal sources of wealth, is demoralized and tottering on its foundations; thousands of people directly dependent upon the industry are going bankrupt; hundreds of thousands, perhaps millions, of others are feeling the effects indirectly; and the State itself is losing millions of dollars annually in reduced gross production tax receipts—all due to the wanton release and waste of oil and gas which nature has been storing up for thousands of years."

Everyone in the oil-producing states knows this picture is not overdrawn. The governor has not exaggerated the actual condition or overestimated the consequences if permitted to continue.

The most hopeful feature of the situation is the popular demand for remedial legislation.

"So acute and disturbing has the emergency become," the governor says, "that citizens from all over Texas have besieged the executive office with telegrams, letters, petitions, long distance calls and personal visits urging a special session. Chambers of commerce, local governing bodies, land, lease and royalty owners, business men and the vast majority of small independent oil men have joined in the demand for immediate legislation."

It is that pressure of informed public opinion that is counted upon to influence the state legislature to act promptly and wisely.

Plainly it will be no time for playing politics. There is a definite job for the legislature to do and urgency for doing it as speedily as possible.

The weak points in the present conservation law show where strengthening is needed to make it effective. The hazards of litigious delay have been demonstrated. An earnest legislature, pressed and watched by a vigilant public opinion, should find ways to make the administration of the law prompt and effective in protecting the public interest.

The immediate future of the oil industry and, in large measure, its ultimate progress depend upon the wisdom and promptitude of the Texas legislature now in session.

It should not permit itself to be influenced by any obstructing force.

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Gum Testing With the Oxygen Bomb

New Safety Features Make This Method a Favored One. Air Jet Test Provides Quantitative Datum

By E. W. Zublin
Texas Pacific Coal & Oil Co.

The numerous investigations concerning gum in gasoline carried out during the last few years have clearly demonstrated the necessity for a reliable test. When one speaks of gum, one is concerned with two different types: The one is present in the gasoline at the time of the test and the other will form during storage. Various names have been suggested for these two types, probably the

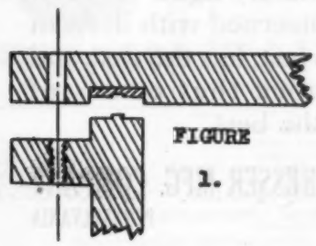


FIGURE 1.

most nearly correct ones being "preformed and potential" gums. Out of the many attempts to measure both preformed and potential gums, two principal tests have evloved, known as the air-jet and the oxygen bomb methods.

The air-jet method, designed to measure the preformed gum has first been suggested by Hunn, Fisher and Blackwood (S.A.E. Jr., January, 1930, p. 31). It consists essentially of evaporating a sample of gasoline in a glass dish on a steam bath while directing a swift current of air against the surface of the sample. Results indicate the test to be reliable and reproducible. Bridgeman and Aldrich of the Bureau of Standards (S. A.E. Jr., February, 1931, p. 191), have subjected this test to a thorough study, pointing out the factors influencing results. They conclude that it is well suited for routine work, combining the necessary accuracy with ease of procedure.

Copper Dish Method

The copper dish method that heretofore had been widely used was proven unreliable a long time ago. The opinion though has been voiced and defended that low copper dish gum insured absence from gumming trouble in engines. While no data are on hand to disprove this, there is no reason for treating to specifications which are more severe than necessary. In as much as most treating procedures resulting in gasoline of low copper dish gum, also reduce the antiknock value of the fuel; a more valuable property is lost for the sake of a less valuable one. Thus the copper dish test is liable to penalize not only the refiner but the customer as well.

The potential gum, according to our present knowledge, can be determined within fair limits by some form of the oxygen gum test as suggested by Vorhees and Eisinger (A.P.I. paper December, 1928). The suggestion of these authors was taken up at once by various institutions and today an oxygen-gum specification has been adopted by both the United States Army and Navy. The Ethyl Gasoline Corp. is experimenting with it, and the A.S.T.M. has taken the method into consideration.

Oxygen Bomb Test

The procedure is about as follows: A suitable sample is exposed to oxygen of above 100 pounds pressure at 212° F. for several hours. During this period the pressure is noted at intervals. After the release of the pressure, the sample, or part of it, is evaporated by a reliable method, such as the air-jet method, and the residual gum is weighed. A drop in pressure of the oxygen within four hours after the start, in the absence of leaks, is believed to indicate poor gum stability on storage. The problem of carrying out the test so as to give consistent results and that of correlating result and storage stability are naturally entirely different. The present discussion is only concerned with some phases of the test procedure.

Vorhees and Eisinger in their experiments used all glass equipment which limited the oxygen pressure to be applied to a low figure. Present development has come to recognize that a pressure of the order of 100 pounds is preferable. This necessitates the use of a steel bomb.

Two types of bombs have been developed and are generally used. The Army Air Corps and Navy specifies a cylinder 2⅜ inches inside diameter and 7⅝ inches inside length. It holds 33.7 cubic inches. A screw cap is used for the top. At some laboratories of the Ethyl Gasoline Corp. the bomb is made of a 12-inch piece of 2-inch steel pipe, with a flange on the top and a bottom welded in. The lid is held in place by means of 6 or 6½-inch bolts, a gasket between lid and cup insuring against leaks. The cubic volume of this bomb is practically the same as that of the bomb used by the Army Air Corps. Each of the two types has its advantage. The dimensions specified by the Army are undoubtedly preferable, as this bomb will hold a larger sample bottle. Needless to mention that the gasoline sample must be introduced and kept during the test in a container that is easy to clean and that does not have a catalytic effect on the oxidation. Iron, copper and many other metals are known to be powerful oxygen transmitters. For this reason the sample to be tested is kept in a glass bottle, which fits into the bomb.

Tendency to Froth

Bombs made of 2-inch pipe barely hold 4-ounce sample bottles, but the bomb of the Army specifications is capable of holding 8-ounce bottles, thus allowing for greater flexibility of operation. The larger bottle is to be preferred even if one intends to expose a 100 cc. sample only. Upon release of the pressure the gasoline has a tendency to froth or foam out of the 4-ounce bottle, at times leaving less than one-half of the original quantity in it.

The lid held in place by means of bolts is probably easier to handle and requires less force for tightening than the screw cap and generally permits greater ease of handling. Figure 1 shows a design that is giving satisfactory service. The gasket consists of cast and machined babbit. Lead was found to creep too easily. Routine workers will invariably tighten the lid too hard, so it was found advisable to provide a gasket metal that withstands creeping to a higher degree. If the depression holding the gasket is machined accurately so as to fit snugly over the top of the cup, creeping can be greatly retarded. It is necessary in this case to slightly grease the joinings preferably with a waterproof grease (water pump grease) to prevent difficulties in removing the lid due to sticking.

Dangers Overcome

During the early experimentations with the oxygen bomb test, two or three accidents occurred. The gasoline in the bomb ignited, rupturing the bomb and injuring the operator. The manner in which these accidents occurred was about as follows: The bomb carrying a pressure gauge on its top was connected to the oxygen supply tank. The connecting valve was

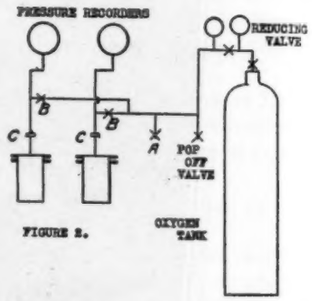
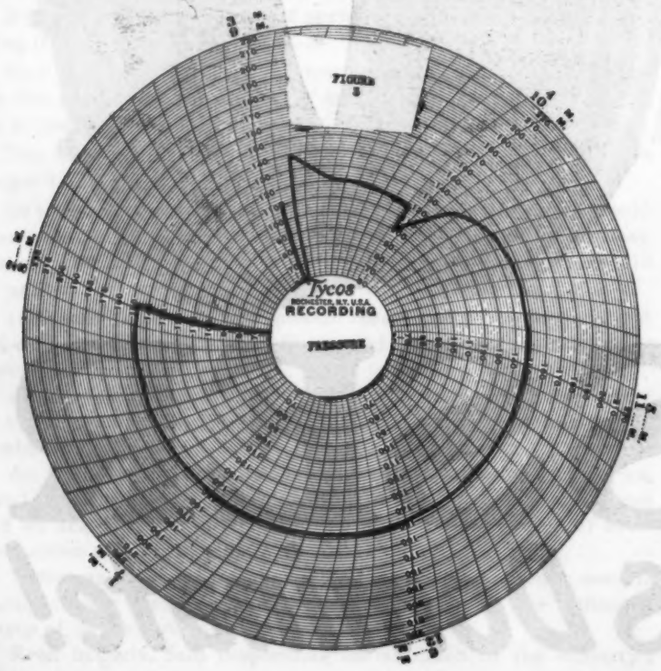


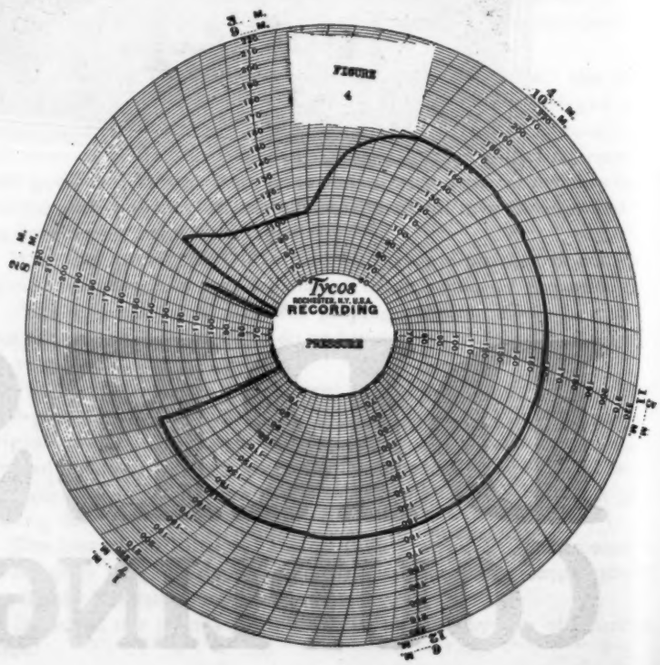
FIGURE 2.

cracked open to permit oxygen to enter the bomb. The gauge failed to register. The operator opened the valve wider, allowing the full tank pressure to act upon the gasoline. Self-ignition may have followed with the before-mentioned severe consequences.

These accidents caused later investigators to take unnecessary precautionary measures. The bombs were placed in spe-

(Continued on Page 104)





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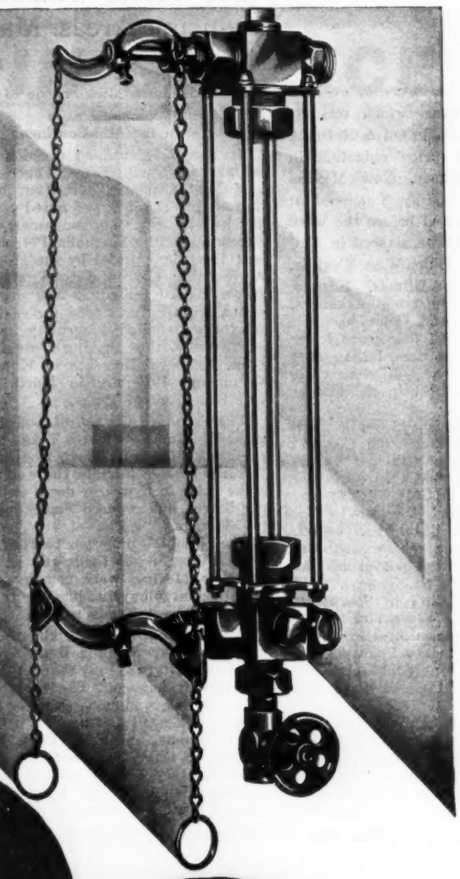

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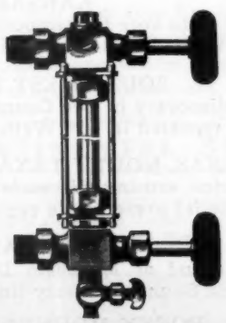

"SURE-DROP"

"SENTRY"

"SATURN"

"SCREW TOP"

"SILEX"

"SAMSON"

Cuts in All Fields East of California

Crude Prices Tumble to New Low Levels in Most Producing Areas. Many Operators Will Shut in Wells

By James McIntyre

The demoralizing influence of overproduction in East Texas, which was responsible for the Humble Oil & Refining Co.'s general crude price reduction in Texas and Lea County, New Mexico, effective Wednesday, July 8, spread at once to other fields and before the week was over prices had been slashed in New York, Pennsylvania, Ohio, West Virginia, Kentucky, Michigan, Illinois, Kansas, Oklahoma, North Louisiana, Arkansas, Montana, Wyoming and Colorado.

As a result crude oil prices are lower in the different states named than they have been for many years. In some cases the prices are the lowest in the history of the field.

In the Eastern fields the South Penn Oil Co., the Tide Water Pipe Co. and the Pure Oil Co., the principal buyers in that division, cut prices 15 cents per barrel in every field on July 11. The new price in Allegany and Bradford (Tide Water posting), is $1.60 per barrel. Northern Pennsylvania oil through National Transit lines was posted by the South Penn Oil Co. at $1.35 per barrel; southern Pennsylvania oil in Southwest Penn pipe line, $1.20; West Virginia oil was cut to $1.10, and southeastern Ohio oil to 95 cents. This makes Pennsylvania Grade oil average about $1.36 plus per barrel. The Pure Oil Co. cut West Virginia oil to $1.10.

In the old Central West fields the Ohio Oil Co. made a 15-cent cut on July 11, making Lima oil 55 cents per barrel; Wooster 58 cents, Illinois 40 cents, Indiana 20 cents, Princeton 40 cents, and western Kentucky 35 cents. The Pure Oil Co. cut Midland, Mich., crude to 37 cents on the same day.

In the Mid-Continent

In the Mid-Continent division Kansas, Oklahoma, North Texas, Central Texas, and East Central Texas (but not East Texas) where oil is purchased on a gravity basis, the major companies with the exception of the Magnolia Petroleum Co. met the prices posted by the Humble Oil & Refining Co. on July 8, starting at below 29, 10 cents; 29-29.9 degrees, 11 cents, with 1 cent added for each degree up to and cluding 40 gravity and above at 22 cents, thus making a weighted average price of 18 cents in Kansas and Oklahoma, 19 cents in North Central and East Central Texas.

The Standard Oil Co. of Louisiana applied the Humble's North Texas prices to the graded fields in North Louisiana and Arkansas which brought the weighted average price in that area down to 18 cents per barrel, and reduced Smackover crude to 15 cents.

The Humble's dime per barrel prices in all the West Texas fields and Lea County, New Mexico, were met by most of the other large buyers; likewise the Humble's Southwest Texas prices.

The first cut in the Oklahoma fields was posted by Sinclair Refining Co. in Oklahoma City, the only field in the State in which it buys oil. The 10 to 22-cent price schedule was made effective on July 8, the Carter Oil Co. posting in Kansas and Oklahoma, and The Texas Company posting in Oklahoma, met the Sinclair prices on July 11, and on the same day the Stanolind Crude Oil Purchasing Co. met the new price schedule, its purchases including Kansas, Oklahoma and North Central Texas crude. The Gypsy Oil Co. met the prices in Kansas and Oklahoma on July 13 and the Gulf Pipe Line Co. met all the Humble's prices in Texas on July 13. The Champlin Refining Co. and the Eason Oil Co. posted the new prices in Oklahoma on July 9.

The Phillips Petroleum Co. announced on July 13 that it had not met the low price schedule and was paying the old scheduled prices in the Texas Panhandle and a number of Kansas refiners were doing the same thing up to Tuesday of this week in Kansas fields. The Bell Oil & Gas Co. with a refinery at Grandfield, Okla., was sticking to the old Oklahoma prices.

Gulf Coastal Cuts

In the Gulf Coast The Texas Company was the first to meet the Humble's new prices for oil in that field but on Coastal crudes bought on a gravity basis. The Texas' schedule starts at 31 cents for oil below 25 gravity and adds 1 cent for each degree upward to 40 degrees and above, at 47 cents, while the Humble's schedule stopped at 35 degrees and above at 42 cents. The Texas Company lowered Markham crude to 25 cents per barrel. Its prices were made effective on July 8. It also met the Humble's West Texas, Southwest Texas and New Mexico prices in the fields where both companies compete as buyers.

The Standard Oil Co. of Louisiana led in the price reductions in Caddo, Homer, Haynesville, Bull Bayou, Sabine, Crichton, De Soto, El Dorado, Sarepta and Carterville, starting at below 29 gravity, 10 cents, with 1 cent added for each degree up to 40 and above at 22 cents. It posted Smackover crude at 15 cents; Urbana at 10 cents, and discontinued posting in Cotton Valley and Bellevue, La. The above prices were made effective July 11.

Rocky Mountain

The Ohio Oil Co. reduced prices 15 cents per barrel in the Rocky Mountain fields on July 11 as follows: Elk Basin, Wyoming, 47 cents; Grass Creek, Wyoming, 47 cents; Lance Creek, Wyoming, 60 cents; Big Muddy, Wyoming, 25 cents; Rock Creek, Wyoming, 30 cents; Sunburst, Montana, 70 cents. The Mid-West Refining Co. and the Continental Oil Co. applied a reduced price schedule to fields in Colorado, Wyoming and Montana.

Crude prices in East Texas continue to drop. Although the average price will probably run around 12½ cents per barrel, it is generally known that some of the operators will take almost anything offered for their oil if only given connections, and 2½ cents per barrel is no myth. A general price of 5 cents per barrel may be expected for the district within a short time if curtailment is not enforced within the next two or three weeks.

Many Wells Shut Down

The immediate effect of the latest fall in crude oil prices was to hurry the call for a legislative session in Texas, and the calling of protest meetings in Kansas and Oklahoma, all of which are covered elsewhere in this edition. Oklahoma operators met and a majority petitioned the governor and Corporation Commission for an order to shut down the Oklahoma City Field temporarily, while Kansas operators at a meeting in Wichita framed

(Continued on Page 106)

Late Fields

OKLAHOMA

The production of the Oklahoma City Field showed a large decline on July 13, when the field made 112,406 bbls. from 70 wells. The production on July 14 was 192,860 bbls. from 94 wells.

The Stanolind Oil & Gas Co. and Tom Slick Oil Co.'s No. 4 Kentzelman, NE cor. SE SW, Section 7-14-4, west of Chandler in Lincoln County, flowed 2,540 bbls. of oil in 24 hours, from the Wilcox sand at 4,970-96 feet.

The Magnolia Petroleum Co.'s No. 1 Cash, SW cor. NE SW, Section 6-14-4, a mile north of production in the West Chandler Field was drilling at 2,900 feet.

The wildcat test in Hughes County, Perrine and others' No. 1 Estes, C NW SW SE, Section 15-5-11, ran tubing and packer and is now estimated to be making 750,000 feet of gas from sand at 1,222-28 feet.

In the Yeager district, Hughes County,

(Continued on Page 108)

REFERENDUM PETITION AGAINST SHARKEY BILL

LOS ANGELES, Calif., July 14.—A referendum petition against the Sharkey bill, California's recently enacted conservation legislation, was filed here last night. If sufficient valid signatures have been secured, the bill becomes inoperative until it can be acted upon at the general election in November, 1932. If Governor Rolph calls a special election to deal with reapportionment, the oil conservation bill will go on the ballot but it probably would be fall before the election would be held. It would be another six months, if the bill is favored at the polls, before its provisions became effective.

SCORE SHEET ON OIL PRODUCTION

Below is shown the allotted average daily production in the United States from April 1 to October 1, 1931, suggested by the Oil States Advisory Committee, and the actual daily average production in the week ending July 11:

	Barrels			
	Allotted	Actual	Over	Under
Texas	714,000	987,047	273,040	.....
California	500,000	519,650	19,650	.....
New Mexico	40,000	42,113	2,113	.....
Oklahoma	550,000	631,915	81,915	.....
Louisiana	65,000	56,115	.....	8,885
Kansas	110,000	101,250	.....	8,750
Arkansas	50,000	43,475	.....	6,525
Eastern	110,000	107,000	.....	3,000
Rocky Mountain fields	60,000	50,415	.....	9,585
Total	2,199,000	2,538,980	376,725	36,745

Total net daily average overproduction, 339,980 bbls.

High Spots in Field News

NORTH LOUISIANA-ARKANSAS

Shelby County's large gasser being killed and new hole may be necessary. Arkansas has quiet week in field.

KANSAS

Operators of state vote for temporary shutdown and protest cut in crude price. Voshell wells being deepened.

SOUTHWEST TEXAS

Pettus sand discovery in Bee County looks like oil well. Important completion reported in Jim Wells County.

WEST TEXAS, NORTH TEXAS AND PANHANDLE

Crude oil price causing discussion of shut-down program in several fields. Belief present rate can not last long.

GULF COAST

Flank sand found at Markham Dome in Matagorda County. Southern Victoria County test may link two areas.

ROCKY MOUNTAIN AREA

New tests planned in northeastern Colorado by Continental Oil Co. Surveying for pipe line from Greasewood Dome.

CALIFORNIA

Kettleman Hills may be pegged at 60,000 bbls. Tentative plan to curtail production at that figure until next January.

OKLAHOMA

Majority of operators would shut down Oklahoma City Field. Deepest test in State, in Caddo County, drilling at 8,615 feet.

EAST TEXAS

Crude cut does not slacken drilling in East Texas districts. Production limited by inability to find connections. Water problem increasing anxiety. Producing area being more clearly defined by extension wells.

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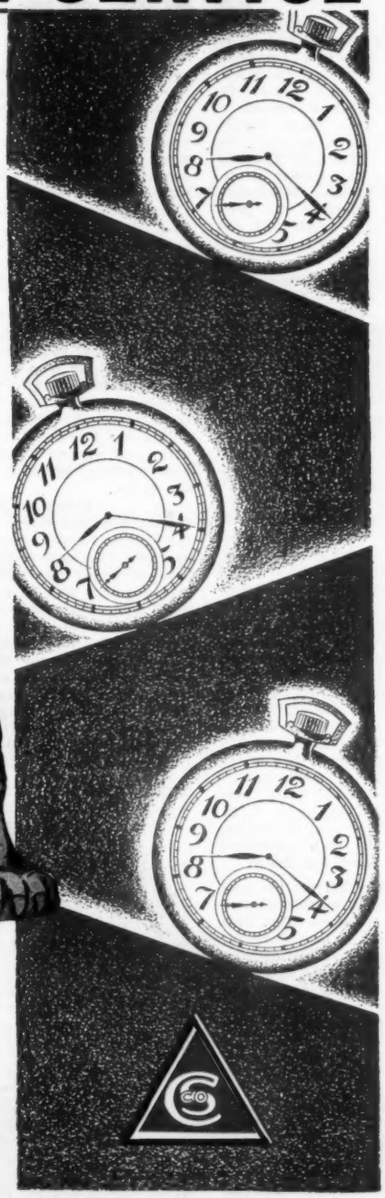

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OGJ-7-16-Gray

CONTINENTAL

Cut Does Not Curb East Texas Locations

Week's Production Sets New Peak. One Hundred Seventy-Five Wells Shut In for Lack of Pipe Line Connections

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., July 13.—It begins to look as if there would be no curtailment of drilling in East Texas unless the special session of the state legislature gives the Railroad Commission power to enforce its orders. Cutting the price of crude did not slacken the staking of locations this week, while the number of completed wells held almost to the number completed last week. Drilling activities, however, did take another slump this week falling from 567 to 538.

There are now 165 drilling tests in the Joiner Pool, Rusk County, 25 first reports and 29 completions. In the Kilgore area there are 150 drilling wells, 37 first reports and 28 completions. The Lathrop Pool, Gregg County, has 129 drilling wells, 23 first reports and 31 completions. There are 13 tests drilling in Smith County, several of them wildcats along the eastern edge of the county. There are eight wildcats going down in Rusk and seven tests drilling in Upshur County.

The last proration sheets issued by the field umpires show that the Lathrop area, Gregg County, has 255 producing units with 199 producing wells, having a total unit allowance of 65,786 bbls. The Joiner area, Rusk County, has a total of 372 units with 415 producing wells, and a total unit allowance of 97,964 bbls. The Kilgore area has 384½ units with 487 producing wells, having a total allowance of 102,381 bbls. This makes a total of 1,012½ units, 1,101 wells, and 266,131 total unit allowance. Forty-eight wells have been completed since this proration sheet was made.

Daily average production for the past week was 381,543 bbls., a gain of over 29,500 bbls. over the previous week. This week's production sets a new peak for daily average production in the district. One hundred seventy-five wells have been shut in for lack of pipe line connections, but the umpires have been seeking connections for these wells, since the new order went into effect. It is not yet known what luck they have had, but the surmise is that they have not met with much success, the pipe line companies being connected with about all the wells they desire, and all the oil they can handle at the present time.

Runs and Shipments

Pipe line runs, tank car shipments and shipments to local refineries all gained in the district during the week ending July 8, the former showing a gain of 32,561 bbls. daily, tank car shipments showing a gain of 4,511 bbls. per day, and a gain of 1,415 bbls. in shipments to the latter. Runs to storage decreased to 15,162 bbls.

The following is a distribution report on the district: By trunk pipe lines 226,265 bbls.; by tank cars 114,215 bbls., and to local refineries 25,901 bbls.

Considering the great number of producers completed each week daily production has not begun to keep pace with it. This is no doubt due to the fact that the operators cannot obtain connections, have not the storage to serve the wells, cannot produce their wells, therefore have to shut them in. Other wells are gradually falling off in production, many have gone dead or are on the pump, while others have to be agitated to make them flow. These have all conspired to keep down a great weekly or daily increase in production.

The producing area lying within the counties of Gregg, Rusk, eastern edge of Smith and the southern edge of Upshur County, is being more clearly defined each week, two wells having proved the northern and the northwestern limits last week, one showing the proximity of the southern line this week, and another proving the western edge in Gregg County. The western edge of the Joiner Pool, in Smith County, has been clearly defined, and the southwestern edge of the pool has also been hedged by wells showing water, which mark the limits in that direction.

National Securities' No. 1 Vernon, located on a 58.7-acre tract in the W. W. Avery Survey, southwest of Gladewater, and almost due west of the Snavely producer, definitely marks the western edge of production in the Gladewater area. On a 30-minute drill stem test it filled within one fourble of the top of the hole with salt water. Total depth is 3,637 feet, which is minus 3,335 feet on subsea datum.

Extension Wells

Champlin and Bass' No. 1 Mason in the Cadene Survey, approximately three-quarters of a mile south of the nearest producer in the Joiner Pool, Rusk County, extended that pool this week, but was a small well, which many consider as proving the nearness of the southern edge of the producing area, holding the opinion that the sand to the south and east is beginning to pinch out and shale up. The test cored saturated sand from 3,648-50 feet. Eight feet of gray sand shale and chalk shale was cored from 3,650-65 feet, and a core at 3,665-70 feet showed but a slightly saturated sand. Total depth of the well is 3,675 feet. On its initial flow the well gauged 45 bbls. the first 15 minutes through 2½-inch tubing, which may be considered a small well for the western and southern part of the field.

The Texas Company's No. 1 Turner in the T. H. Smith Survey, in the northeastern part of the Joiner Pool, Rusk County, is another extension well. The test is standing shut in, the company now engaged in moving out rig and equipment. It was swabbed dry, allowed to set for one hour, then swabbed again, swabbing only 15 bbls. before swabbing dry. A total of 750 bbls. has been swabbed into the tanks from the well, and at the present price of the crude the well cannot be produced except at a loss. Total depth of the hole is 3,643 feet. Four feet of saturated sand was cored from 3,598-3,602 feet. The last 41 feet showed nothing but shale on the core test.

Some Crooked Holes

An idea of how crooked some of the holes in the district have been drilled, may be obtained by observing the report made when the Imperator Oil Co.'s No. 1 Cox, in the R. H. Penny Survey, Joiner Pool, was surveyed. At 1,000 feet the hole was off 6 degrees; at 1,500 feet it was off 12 degrees; at 2,000 feet it was off 15 degrees; at 2,500 feet it was off 52 degrees and at 2,781 feet it was off 75 degrees. If drilling had continued the crew might have seen the bit cutting its way up through the derrick floor. Total depth of the hole is 3,815 feet in dry sandy shale. Casing was set at 3,640 feet. The well would not flow, and the crew tried to swab it, but the swab could not be forced below 2,500 feet. It is now standing shut down, not flowing any oil. The Woodbine sand was cored from 3,668-93 feet, sand and shale was cored from 3,697-3,740 feet. Test was made by the Sperry-Sun Well Surveying Co.

Hoosier's No. 1 Neal in the Cordova Survey, Joiner Pool, was shut down at a total depth of 3,908 feet in shale showing a 21-degree declination at 1,100 feet and 29 degrees crooked hole at 1,345 feet. It was first completed at 3,800 feet after coring sand from 3,744-60 feet, but did not flow when swabbed through casing. When deepened, it logged no more sand, consequently the hole was proved to be a great distance off of vertical.

Rector and Davis' No. 1 Brightwell in the R. E. Winn Survey, Kilgore Pool, was 15 degrees from vertical at 1,500 feet; 30 degrees off at 2,500 feet and only 15 degrees off at 3,500 feet. It was shut down at 3,810 feet, showng a sub-sea datum of minus 3,398 feet at the bottom of the hole. This well is practically in the heart of the pool.

Water Table Data

A survey of the wells drilled close to the water table in the three areas shows 93 below sub-sea datum 3,300 feet in Rusk County; 26 below that depth in Gregg County and 7 in Smith County, giving an ominous appearance to these wells, and not adding to the safety to those offsetting them, as water encroachment is sure to take place within a short time if the wells are not continued pinched. There are 20 wells in the district reported making salt water, but many others making less than 1 per cent are not reported, and there is believed to be around 30 of those. A shake-up test is now being made to find just how many are making water of any such consequence. The Kilgore Pool leads in the number of wells show water, having 15 showing water at the present time.

The following is a list of producing wells which are making, or have made, salt water since they were drilled in in the East Texas district: Stanolind Oil & Gas Co. and Weaver's No. 1 Everett, William Goodwin Survey in Upshur County; Magnolia Petroleum Co.'s No. 1 Cole in the Johnson Survey, Gregg County; Cranfill and Reynolds' No. 1 Blackman, Chisum Survey, Rusk County; Gulf Production Co.'s No. 1 Birdsong, Chisum Survey, Rusk County; East Texas Refining Co.'s No. 1 Wills, R. W. Smith Survey, Rusk County; East Texas Refining Co.'s No. 5 Wills, R. W. Smith Survey, Rusk County; Magnolia Petroleum Co.'s No. 1 Wills, R. W. Smith Survey; McMahon's No. 1 Wills, R. W. Smith Survey, Rusk County; Burton Drilling Co.'s No. 1 Florey, Peter Holmes Survey, Rusk County; Magnolia Petroleum Co.'s No. 1 Florey, Peter Holmes Survey, Rusk County; Sun Oil Co.'s No. 1 Barker, A. N. Ryan Survey, Rusk County; Killiam and Reed's No. 1 Brock, R. W. Smith Survey, Rusk County; Turman Oil Co.'s No. 1 Brightwell, Sevier Survey, Rusk County; Luling Oil & Gas Co.'s No. 1 Brightwell in the Winn Survey, questionable as to its water proclivities; Humble Oil & Refining Co.'s No. 7 Crim, Sevier Survey, Rusk County; same company's No. 16 Crim, Sevier Survey, Rusk County; Elliott's No. 1 Terrell, Ryan Survey, Rusk County; Masda Oil & Gas Co.'s No. 1 Cotton, Kilgore Pool, Rusk County; East Texas Refining Co.'s No. 1 Tyiska, near the Rusk County line in Smith County, southwest of Overton; Sinclair Oil & Gas Co.'s No. 1 Jarvis, Vargas Survey, Smith County; Sinclair Oil & Gas Co.'s No. 1 Mayfield, Jordan Survey, Smith County.

Some of these wells have been plugged back and the water shut off, while the majority of the others are pinched in to a small per cent of their potential to hold back the water. Many others are considered as making as high as .7 of 1 per

(Continued on Page 89)

EAST CENTRAL TEXAS WILDCATS

Week Ending July 13

ANDERSON COUNTY

Company, well, farm name, section and block—	Remarks:
Riango Oil Co.'s No. 1 J. Lynn, 1,400 ft. from NE line and 7,425 ft. from E line of survey, R. Brown Sur.	Shut down 2,040 ft.
H. B. McConnell et al's No. 1 N. B. Watson, 500 ft. from W line and 4,850 ft. from N of S line of survey in S half of 139-ac. tract, M. Main Sur.	Derrick.

ANGELINA COUNTY

R. O. Moore's No. 1 Abney Estate, 50 ft. N of Blk. No. 6, immediately out of city limits of Lufkin	T. D. 1,350 ft.; set 6⅝-in. csg.; bailed dry.
Pollick Oil Co.'s No. 1 Sessions, 1,250 ft. from N and 1,250 ft. from E line of Jesus De La Garza Sur.	Shut down 3,600 ft.

BOWIE COUNTY

Tom Bell's No. 1 Merritt, 1,225 ft. from N and 875 ft. from E line of survey, T. S. McKinney Sur.	Shut down 2,851 ft.
Parkering-Jones et al's No. 1 W. W. Whybark, 200 ft. from S and W of SW cor. of J. A. Dyer Sur.	Derrick.
Lee Timberlake et al's No. 2 Julius N. Tidwell, 655 ft. from E and 2,510 ft. from S of survey in L. M. Rice Sur.	Salt water on drill stem test; shut down 3,000 ft.

CAMP COUNTY

W. E. Duke et al's No. 1 L. B. McCaslen, 2 miles NW of Lafayette, Mary Hays Sur.	Drlg. 3,300 ft.
Monitor Oil Co.'s No. 1 E. A. King, 150 ft. E of railroad and 150 ft. N of S line of E. A. King 318-ac. tract, E. A. Peek Sur.	Drlg. 3,772 ft.

CHEROKEE COUNTY

Ben Banner's No. 1 J. Williams Estate, 150 ft. S and 300 ft. W of SE cor. of the N. Hogg heirs and in the J. L. Hogg heirs Sur.	Drlg. 4,295 ft.
Denman et al's No. 1 Mrs. Renfroe, 330 ft. N of S line and 330 ft. E of W line of farm, Uriah Moore Sur.	Shut down.
Helen-Clare Oil Co.'s No. 1 Mrs. M. P. Perkins, 1,800 ft. from N and 450 ft. from W of survey, Thomas Stafford Sur.	Rig up.
William A. Stone's No. 1 Blount Decker, 900 ft. E of E line of S. Selman Sur. and 1,200 ft. S of N line of E. M. Decker 406-ac. tract in George Ruddle Sur.	Fishing 5,406 ft.
Walton Oil Co.'s No. 1 E. Singletary, 250 ft. W and 150 ft. N of NE cor. of M. Lacey Sur. and in Walters Sur. on Singletary 84-ac. tract	T. D. 2,960 ft.; shut down.

DALLAS COUNTY

Paris' No. 1 Wilkinson, 2,787 ft. from NW and 3,241 ft. from SW of John P. Anderson Sur.	T. D. 870 ft.; shut down.

DELTA COUNTY

Delta Development Co.'s No. 2 Mallie Ablowich, 300 ft. S of No. 1 Cooper, Townsite Sur.	Reaming to bottom at 3,128 ft.
D. S. Hood's No. 1 J. J. Balser, 185 ft. from S and 580 ft. W of Balser 40-ac. tract in SE cor. T. B. Laddin Sur.	Rig up.

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Consider Shutting in West Texas Wells

Operators in North Texas and Panhandle Also Trying to Determine Action as Result of Ruinous Crude Oil Prices

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., July 13.—With the price of crude in West Texas cut to a flat rate of 10 cents per barrel on July 8, that district is in doubt as to whether to shut down all producing wells, or to go ahead and produce at a loss. It is reported one company operating in the Howard-Glasscock Pool has ordered 16 wells shut in, and two wells on the Crane-Upton leases shut in. Offset producers to these wells were in sympathy with the plan, and as a result of this initiative on the part of the one company, these two fields may be shut in, as may all the pools in the Permian Basin.

The lowest price ever posted on any West Texas oil was reported during the week when the Shell Petroleum Corp., purchaser of crude oil in the shallow Toborg-Tippett Pool, lowered the price of that oil to 6 cents per barrel. A law suit is now pending in regard to the cut in price of crude in this pool for the State University owns some of the land in the pool, on which there is production, and is loath to take 6 cents as a price of the oil produced on its land. Such a suit may be brought to determine the value of oil. J. H. Walker, land commissioner for the State, refused to accept the price, and is awaiting the next move by the Shell Petroleum Corp.

Lowering the price of oil on individually owned lands may not cause anything but considerable writing, talking, many meetings and a great amount of discouragement, but when such prices are paid for oil run from University of Texas or state leases, politicians and lawmakers of the State may take things into their own hands, ask for an accounting, make a sweeping investigation and cause considerable trouble for some of the major purchasers operating in the State.

The principal producers in the shallow Toborg-Tippett Pool, Pecos County, are: Cardinal Oil Co., Southern Crude Oil Purchasing Co., Tidal Oil Co. and Culbertson Brothers. Production is found from 400 to 500 feet. Gravity of the oil averages around 22 degrees.

High Gravity Oil Prices Cut

The high gravity oil producing Wheat Pool in Loving County has also been hit by the latest cut. Regardless of the oil being sweet and of 42 degrees gravity, it too was cut to 10 cents along with the rest of the oil produced in the district. The Paso-Tex Pipe Line Co., which transports the oil to the Paso-Tex Refining Co.'s plant and Rio Grande Oil Co.'s refinery at El Paso posted the new low price for this field. The Lockhart Oil Co., which has temporarily shut down the Rio Grande refinery at El Paso, which is an associated plant, may continue to keep its wells shut in in the field, and the California Co., which is associated with the Paso-Tex Refining Co. may also shut in its wells, although the refinery has but this one supply of crude, and may continue to be operated on the low priced oil from the California Co.'s wells. Production from the California Co.'s wells averaged 1,280 bbls. per day for the past week, the company being the largest producer in the field. There are 44 producers, making a daily average of around 4,350 bbls. per day. A year ago crude from this field was bringing almost 11 times the amount it is now, having dropped from $1.08 at that time to the present price.

Operators in the West Texas district are of the opinion that the present price will not last long, consequently have their doubts in regard to shutting in the wells in that district. Many feel if the wells are shut in it will practically ruin them, and in some cases the wells will be difficult to handle when put on production. The Winkler Pool cannot be shut down on account of such a volume of water being produced in the wells, and the Crane and Upton areas would give considerable trouble on account of the age of the wells, and the amount of water produced in many of them.

May Run to Storage

Several of the companies operating in the district have thousands of barrels of empty storage and can produce their wells as they have been in the past running the oil to storage in case they do not want to run it to the coast through associated pipe line companies' lines.

Daily average distribution has been falling off in the West Texas area during the past few weeks, and since the new price schedule went into effect still larger decreases may be noticed on the distribution reports, with runs to storage increasing each week.

Trunk line shipments fell from 198,726 bbls. for the previous period to 182,544 bbls. the current period, a difference of over 16,000 bbls. per day. Shipments to local refineries only fell off about 1,000 bbls. per day, from 25,753 bbls. to 24,704 bbls. during the last period. Shipments by tank cars fell from 7,441 bbls. to 5,776 bbls. A daily average of 17,605 bbls. was run to storage during the last period, and this amount may be greatly exceeded during the next period.

To Drill Important Test

Another important western Crane County test is to be drilled by the Southwest Oil Production Co., a subsidiary of Cranfill Brothers Oil Co. of Dallas. This new company has made a location in the NW of Section 3, Block B-27, Public School Lands, on the Tubbs ranch, immediately north of the discovery well of this area, Cranfill Brothers and Gulf Production Co.'s No. 1 Tubbs, which was recently completed for an initial production of 107 bbls. per day. The well was drilled to a total depth of 5,336 feet, but was plugged back and shot before completed. It was the first well in the Permian Basin to pick up a producing horizon below the sulphur water strata, consequently became one of the most interesting wells in the district, and was watched closely until its completion. Another test drilled 2 miles to the south was abandoned as dry. Cranfill Brothers and the Atlantic Oil Producing Co. drilled that test. The Shell Pipe Line Co. has a short lateral connecting the Tubbs producer with its main line from Winkler County to McCamey.

Panhandle Also Hit

Crude prices in the Panhandle district also hit rock bottom during the past week when the Humble Oil & Refining Co. posted new prices cutting 40 gravity crude produced in that district to 19 cents for oil coming from Gray County, and 17 cents for the same gravity crude produced in Carson and Hutchinson Counties.

Shutting down wells in this district has not been generally discussed like in the West Texas district.

Buys Gathering System

The Bell Oil & Gas Co. of Tulsa has purchased the entire gathering system of the Tidal-Western Oil Corp. in the Burkburnett area of the Wichita Falls district, which includes around 40 or 50 miles of line, steel storage and lease tanks and pump stations. The former company will continue to take oil from the latter's system at Bridgetown, Tex., transporting the crude to Grandfield, Okla., where the Bell Oil & Gas Co. has a refinery.

Cut Proration Cost

The cost of administering proration in four West Texas districts has been reduced about $1,300 per month by consolidation of Winkler, Yates, Crane-Upton and Ector areas under one umpire, who has consolidated office equipment in Midland.

To carry on work of the combined areas, a general West Texas advisory committee, composed of the chairman of each of the four districts, has been created. Local advisory committees in each of the four districts continue to function in handling matters pertaining to the individual pools.

L. E. Barrows, manager of The Texas Company's West Texas, New Mexico and Arizona division headquarters in Fort Worth, is chairman of the Crane-Upton advisory committee and was named chair-

(Continued on Page 92)

WILDCAT OPERATIONS IN TEXAS PANHANDLE

Week Ending July 13

CARSON COUNTY

Company, well, farm name, section and block— Remarks:

Deep Lake Oil Co.'s No. 1 Keys, NE cor. SW, Sec. 1, Blk. 4, I.&G.N. Sur. ... S.G. 2,230 ft; 12,000,000 ft. gas; drlg. 2,952 ft.

El Paso-Amarillo O. & G. Co.'s No. 1 Chapman, 594 ft. S, 1,458 ft. E, Sec. 7, Blk. 3, A.B.&M. Sur. ... Rig.

Interstate Prod. Co.'s No. 1 Seiber, C NW, Sec. 10, Blk. 7, H.&G.N. Sur. ... Drlg. 2,495 ft.

The Texas Co.'s No. 1 Crtuchfield, 1,320 ft. S, 1,331 ft. E, Sec. 29, Blk. 4, I.&G.N. Sur. ... Drlg. 256 ft.

CHILDRESS COUNTY

C. L. Sloan et al's No. 1 B. P. Smith, Sec. 49, F. P. Knott lands ... T.D. 5,000 ft.

COLLINGSWORTH COUNTY

Dixon et al's No. 1 Bell, 330 ft. N, 1,320 ft. W, Sec. 102, Blk. 31, H.&G.N. Sur. ... Top pay 2,498 ft; swbd. 15 bbls. oil; approximately 1,200 ft. oil in hole; S.D. 2,503 ft.

COTTLE COUNTY

Darby Oil Co. and Merry Bros. & Perrin's No. 1 Richards, 330 ft. NE, Sec. 13, B.S.&F. Sur. ... Drlg. 4,905 ft.

GRAY COUNTY

Anderson et al's No. 2 Vollmert, 330 ft. N and W, SW, Sec. 140, Blk. 3, I.&G.N. Sur. ... Rig.

Back & Barber's No. 1 Back, 330 ft. S and E, SW, Sec. 45, Blk. 25, H.&G.N. Sur. ... Location.

Boyles et al's No. 1 Colebank-Morse, 330 ft. NE, Sec. 55, Blk. 25, H.&G.N. Sur. ... Spudded and S.D.

Brown et al's No. 1 Duncan, 330 ft. S and E, NW, Sec. 93, Blk. 3, I.&G.N. Sur. ... S.D. 950 ft; trying to pull 8-in. csg.

Danciger O. & R. Co.'s No. 1 Barrett, NW cor. S½ NE, Sec. 128, Blk. 3, I.&G.N. Sur. ... T.D. 3,365 ft; plugged back 3,335 ft; top pay 3,175 ft; swbd. 60 bbls; to shoot.

Danciger O. & R. Co.'s No. 1-B Barrett, SW cor. N½ NE, Sec. 128, Blk. 3, I.&G.N. Sur. ... T.D. 3,280 ft; top pay 3,221 ft; shot with 200 qts. 3,221-65 ft; swbng. 10 bbls. per hr.

Danciger O. & R. Co.'s No. 1 Barnett, 231 ft. S, 330 ft. W, E½ of N 56 ac., Sec. 126, Blk. 3, I.&G.N. Sur. ... 5,000,000 ft. gas 3,097 ft; S.D. 3,097 ft.

Parton Holt and Shell Pet. Corp.'s No. 1 Morse, 330 ft. S and E, Sec. 6, Blk. 26, H.&G.N. Sur. ... Rig.

(Continued on Page 88)

WILDCAT OPERATIONS IN WEST TEXAS

Week Ended July 13

ANDREWS COUNTY

Company, well, farm name, section and block— Remarks—

Deep Rock Oil Co. et al's No. 1 Kuykendall, 2,310 ft. from N and E of SW cor. Sec. 24, School Blk. A-46.. Shut down; total depth 4,648 ft.; plugged back to 4,565 ft.

BREWSTER COUNTY

Brewster Oil Co.'s No. 1 fee, 2,640 ft. S and 2,598 ft. E of NW cor. Sec. 45, Blk. G-15, G.C.&S.F. Sur. ... Shut down 1,935 ft.

E. L. Chapman's No. 1 Skinner, C SW SE Sec. 100, Blk. 2, G.C.&S.F. Sur. ... Shut down 1,302 ft.

Trans-Pecos Oil & Gas Co.'s No. 1 Jones, 930 ft. from N and 2,500 ft. from E of Sec. 18, Blk. G-15, G.C.& S.F. Sur. ... Shut down 2,820 ft.

Van McPhail's No. 1 McIntyre, SE cor. Sec. 59, Blk. 352, 7 miles south Alpine ... Shut down 1,750 ft.

CONCHO COUNTY

Beesley et al's No. 1 Waring Estate, 400 ft. from N and E Sec. 163, T.&N.O. Sur. ... Shut down 267 ft.

Betts & Dennis' No. 1 H. E. Woods, 710 f. from E and 150 ft. from S Sec. 3, H.E.&W.T. Sur. ... Shut down 80 ft.

Turner et al's No. 1 Borsig, 150 ft. from S of NE cor. G. Emmig Sur. 130, 6 miles W of Paint Rock ... Shut down 1,850 ft.

CRANE COUNTY

E. H. Sides et al's No. 1 B. P. Nolen, 150 ft. from S and 150 ft. from W of N 160 acres, Sec. 8, Blk. 31, H.&T.C. Sur. ... Show oil 1,920 ft.; drlg. 2,052 ft.

Southwest Oil Prod. Co.'s No. 1 Tubbs, 2,310 ft. from NW and SW Sec. 3, Blk. B-27, P.S.L. Sur. ... Location.

CROCKETT COUNTY

Doleman & Moore's No. 1 Ferner, 3,125 ft. from N and 1,485 ft. from E of Sec. 36, Blk. 2, I.&G.N. Sur. ... Spudded and shut down.

CULBERSON COUNTY

Kornrumpf et al's No. 1 Garren, 330 ft. S and W Sec. 15, Blk. 79, Public School Land ... Shut down 1,380 ft.

DAWSON COUNTY

Albaugh et al's No. 1 Robinson, C NW Sec. 46, Blk. M, E.L.&R.R. Sur. ... Spudded 20 ft. and shut down.

ECTOR COUNTY

H. F. Wurtz' No. 1 E. A. Ibbetson et al, 330 ft. from N and E lines of NW Sec. 16, Blk. 46, Twp. 3s, G.M. M.Br.&A. Sur. ... Shut down 3,275 ft.

EL PASO COUNTY

Tri-State Oil Co.'s No. 1 Bobadella, 1,325 ft. from S and E lines Sur. 254, S.F. No. 7,247 ... Show gas 795 ft.; shut down 1,300 ft.

(Continued on Page 88)

CRACK CRUDE DIRECT WITH THE DUBBS UNIT

(Continued from Page 20)

The topped crude of 24.7 A.P.I. gravity represents 63.3 per cent of the crude oil.

The properties of the crude oil are as follows:

A.P.I. gravity	37.9
Sulphur, per cent	0.23
Cold test	below 0° F.
Initial boiling point, °F.	118

A. S. T. M.
(100 cc. distillation)

Percent distilled over—	°F.
5	160
10	196
20	261
30	348
40	438
50	526
60	675
70	701
80	724
90	749
Endpoint	760+
Coke, per cent by weight	2.3
Loss, per cent	1.0

The Joiner crude was cracked in its entirety in a continuous manner. The yield of 70 octane number gasoline was over 70 per cent, based upon the crude oil charged to the cracking process.

Two experimental runs were made upon the Joiner crude oil, the results of which are tabulated as follows:

PRODUCT YIELDS
(Based on crude oil)

Gasoline, per cent	71.0	70.7	70.9
Gravity, °A.P.I.	60.2	60.4	60.3
Endpoint, °F.	404	394	399
Octane number	70	69	70
Flashed residue, per cent	22.6	21.4	22.0
Gravity, °A.P.I.	8.6	7.7	8.2
S. F. viscosity at 122° F.	90	124	107
Gas (cubic feet per barrel of raw oil)	328	361	345
Gas and loss, per cent	6.4	7.9	7.1

ANALYSES OF THE CRACKED GASOLINE

Gravity, °A.P.I.	60.2	60.4
Octane number	70	69

100 CC. A. S. T. M. DISTILLATION

Initial boiling point, °F.	91	95
Per cent distilled over—	°F.	
5	124	131
10	143	147
20	177	179
30	206	206
40	232	231
50	258	254
60	281	275
70	309	299
80	338	330
90	382	367
Endpoint	404	394

ANALYSES OF THE FLASHED RESIDUE

Gravity, °A.P.I.	8.6	7.7
Flash (Cleveland open cup), °F.	210	215
Fire (Cleveland open cup), °F.	305	315
Flash (Pensky Martens), °F.	165	175
Visc. S. F. at 122° F.	90	124
Cold test, °F.	35	40
B. S. and water, per cent	0.2	0.2

100 CC. A. S. T. M. DISTILLATION

Initial boiling point, °F.	380	406
Per cent distilled over—	°F.	
5	506	514
10	566	572
20	636	634
30	671	663
40	691	685
50	704	696
60	...	703
Endpoint	754	737
Per cent over	86.0	83.0
Per cent coke by weight	14.7	17.5
Per cent at 410° F.	0.5	Trace
Per cent at 437° F.	1.0	0.5
Per cent at 572° F.	11.0	10.0

Cracking of Topped Crude

The Joiner crude oil was skimmed of its 400° F. endpoint gasoline content. The straightrun represented 35.7 per cent of the crude. The topped crude left as a residue was 63.3 per cent. The topped crude used as cracking stock had a high cold test of 65.

The analyses of the straightrun gasoline and the topped crude oil are given below:

GASOLINE

Gravity, °A.P.I.	58.7
Octane number	56

100 CC. A. S. T. M. DISTILLATION

Initial boiling point, °F.	124
Per cent distilled over—	°F.
5	159
10	174
20	196
30	217
40	235
50	255
60	275
70	301
80	325
90	356
Endpoint	400

TOPPED JOINER CRUDE

Gravity, °A.P.I.	27.4
Flash (Cleveland open cup), °F.	220
Fire (Cleveland open cup), °F.	250
Flash (Pensky Martens), °F.	215
Viscosity S. F. at 122° F.	29
Sulphur, per cent	0.43
Cold test, °F.	65

100 CC. A. S. T. M. DISTILLATION

Initial boiling point, °F.	415
Per cent distilled over—	°F.
5	461
10	490
20	526
30	579
40	635
50	682
60	700
70	706
80	715
90	710
Endpoint	726
Per cent coke by weight	3.4
Per cent at 437° F.	2.0
Per cent at 572° F.	28.5

The operating conditions to which the topped crude oil was subjected with the yields of products are tabulated as follows. They are the results of two experimental tests conducted under comparable conditions to which the crude oil was cracked.

PRODUCT YIELDS
(Based on topped crude)

Gasoline, per cent	54.2	57.3	55.8
Gravity, °A.P.I.	59.2	59.4	59.2
Endpoint, °F.	397	400	399
Octane number	73	73	73
Flashed residue, per cent	38.0	36.2	37.1
Gravity, °A.P.I.	8.6	7.4	8.0
S.F. visc. at 122° F.	95	142	119
Gas (cubic feet per barrel of topped crude)	496	470	483
Gas and loss, per cent	7.8	6.5	7.1

The properties of the cracked gasolines and flashed residuums are shown below:

ANALYSES OF CRACKED GASOLINES FROM TOPPED CRUDE

Gravity, °A.P.I.	59.0	59.4
Octane number	73	73

100 CC. A. S. T. M. DISTILLATION

Initial boiling point, °F.	108	103
Per cent distilled over—	°F.	
5	136	128
10	141	152
20	180	184
30	208	213
40	234	240
50	261	268
60	282	292
70	306	316
80	330	340
90	364	371
Endpoint	397	400

ANALYSES OF THE FLASHED RESIDUE FROM TOPPED CRUDE

Gravity, °A.P.I.	8.6	7.4
Flash (Cleveland open cup), °F.	250	255
Fire (Cleveland open cup), °F.	355	360
Flash (Pensky - Martens), °F.	185	170
Viscosity S. F. at 122° F.	95	142
Cold test, °F.	50	50
B. S. and water, per cent	0.2	0.4

100 CC. A. S. T. M. DISTILLATION

Initial boiling point, °F.	437	434
Per cent distilled over—	°F.	
5	547	538
10	584	592
20	654	664
30	701	705
40	726	715
50	744	725
60	752	744
70	...	...
80	...	...
90	...	...
Endpoint	760+	760+
Per cent coke by weight	15.3	18.2
Per cent at 410° F.	0.0	0.0
Per cent at 437° F.	I.B.P.	Trace
Per cent at 572° F.	8.0	8.5

The straightrun and cracked gasolines were blended in the proportion in which they were produced from the topping and cracking of topped crude oil operation.

The yield of blended gasoline averaged 70.9 per cent, having an octane number of 66.

The yields of gasoline, flashed residuum and gas are tabulated as follows:

PRODUCT YIELDS
(Based on crude oil)

Straightrun gasoline, per cent	35.7	35.7	Aver. 35.7
Cracked gasoline, per cent	34.3	36.1	35.2
Total gasoline, per cent	70.0	71.8	70.9
Octane number	65	66	66
Flashed residuum, per cent	24.0	22.9	23.5
Gas (cubic feet per bbl.)	314	298	306
Gas and loss, per cent	6.0	5.3	5.6

The 400° F. endpoint gasoline which was distilled from the Joiner crude was cracked in order to improve its knock rating.

Analysis of this gasoline is shown:

Gravity, °A.P.I.	58.7

100 CC. A. S. T. M. DISTILLATION

Initial boiling point, °F.	124
Per cent distilled over—	°F.
5	159
10	174
20	196
30	217
40	235
50	255
60	275
70	301
80	325
90	356
Endpoint	400
Octane number	56

The octane number of this gasoline was 56 as obtained by test on a Series 30 Ethyl standard motor. The 375° F. cut from the above straightrun gasoline also showed an antiknock rating of 56 octane number when tested in the same manner.

Due to the low knock rating of the straightrun gasoline, it was thought to be more economical to crack it in its entirety, rather than fractionate out a low endpoint gasoline and then crack the naphtha fraction.

The operating data and products yields are tabulated as follows:

PRODUCT YIELDS
(Based on 400 endpoint gasoline)

Gasoline, per cent	83.3	86.2	87.3
Gravity, °A.P.I.	60.6	60.6	60.6
Endpoint, °F.	375	368	373
Octane number	71	71	71
Bottoms, per cent	2.7	3.4	3.1
Gravity, °A.P.I.	24.2	25.2	24.7
Gas (cubic feet per bbl.)	244	261	253
Gas and loss, per cent	9.0	10.4	9.6

ANALYSES OF CRACKED GASOLINES FROM STRAIGHTRUN GASOLINE

Gravity, °A.P.I.	60.6	60.6
Octane number	71	71

100 CC. A. S. T. M. DISTILLATION

Initial boiling point, °F.	93	108
Per cent distilled off—	°F.	
5	136	143
10	158	160
20	183	182
30	206	203
40	224	220
50	241	237
60	260	255
70	283	276
80	308	300
90	346	330
Endpoint	375	368

ANALYSES OF RESIDUE FROM CRACKING STRAIGHTRUN GASOLINE

Gravity, °A.P.I.	24.2	25.2

100 CC. A. S. T. M. DISTILLATION

Initial boiling point, °F.	383	387
Per cent distilled over—	°F.	
5	413	410
10	424	426
20	431	434
30	440	443
40	450	450
50	460	462
60	475	476
70	502	510
80	565	580
90	670	704
Endpoint	746	744

The results of cracking the straightrun gasoline and the topped crude separately and then blending the products are shown in the table below.

PRODUCT YIELDS
(Based on crude oil)

Cracked gasoline (from straightrun), per cent	31.5	30.8	Aver. 31.2
Cracked gasoline (from topped crude), per cent	34.3	36.1	35.2
Total cracked gasoline, %	65.8	66.9	66.4
Octane number of blended gasolines	71	72	72
Residue (from cracking straightrun gasoline), %	1.0	1.2	1.1
Flashed residuum (from topped crude), %	24.0	22.9	23.4
Total residue, %	25.0	24.1	24.5
Gas and loss, %	9.2	9.0	9.1

All gasoline yields include the gasoline recovered from the incondensable gases in each test.

Joiner crude or cracking stocks therefrom are low in sulphur and refine readily into finished gasoline by means of chemical reagents such as sulphuric acid, caustic soda and water or by means of treatment in the vapor phase.

MAY PUT PRORATION VIOLATORS UNDER BOND OR RECEIVERSHIP

FORT WORTH, Tex., July 13.—Oil attorneys have found a statute through which they think damages may be collected from proration violators draining the property of producers complying with the Railroad Commission's curtailment orders. The Railroad Commission, it is thought, will not, in future, sanction or ignore proration violation by operators.

The Railroad Commission has either permitted by order, or failed to press charges against operators violating proration, if they were offset by an operator producing at capacity under injunction. Reports from Austin are that all violations, except those protected by injunction will be reported to the attorney general's department for prosecution.

While seeking means of protecting property other than by injunction, or through violation of orders, oil attorneys thought they had found a solution in Article 4,644, passed in 1919 as Senate Bill No. 319.

The article provides that a producer adjacent to another's property may be placed under bond, or a receiver named providing the court is convinced that damages may result to his neighbor through loss, or injury of his minerals.

Attorneys have taken the position that a producer in East Texas or any other Texas oil pool, who is complying with the Railroad Commission's orders, has the privilege under Article 4,644 of demanding suitable bond, or a receivership, for proration violators that may own offset acreage.

In case the Railroad Commission's proration rules are sustained in court, attorneys point out, no form of damages will be recoverable from offsets to repay their neighbors for drainage. Should proration violators be placed under bond, the damaged operator would be in position to collect.

Two suits being prepared alleging that proration violators offsetting properties in East Texas should be placed under bond, or a receivership to protect the plaintiff against damages, such as drainage, natural pressure depletion and water intrusion that may be created by excessive withdrawal.

The text of Article 4,644 which attorneys believe gives proration observers ample protection against violators without opening their wells, follows:

"No injunction or temporary restraining order shall ever be issued prohibiting subsurface drilling or mining operations on the application of an adjacent land owner claiming injury to his surface or improvements or loss of or injury to the minerals thereunder, unless the party against whom drilling or mining operations is alleged as a wrongful act is shown to be unable to respond in damages for such injury as may result from such drilling or mining operations; provided, however, that the party against whom such injunction is sought shall enter into a good and sufficient bond in such sum as the judge hearing the application shall fix, securing the complainant in the payment of any injuries that may be sustained by such complainant as the result of such drilling or mining operations.

"The court may, when he deems it necessary to protect the interests involved in such litigation, in lieu of such bond, appoint a trustee or receiver with such powers as the court may prescribe, to take charge of and hold the minerals produced from the lands of those complained against or the proceeds thereof subject to the final disposition of such litigation."

PLANT AT FORT STOCKTON

FORT WORTH, Tex., July 13.—W. Berryman is constructing a 300-bbl. capacity refinery at Fort Stockton to refine crude from the Pecos Valley Pool, northern Pecos County, and the Grand Falls Pool, southern Ward County. Oil from the pools will probably be trucked to Fort Stockton as there is no pipe line serving the pools running near the town, and it cannot be shipped in by tank cars. Local retail stations will handle the output of the plant.

Pipe Line Construction News

PIPE LINE EXPENSE IN CHICAGO SUPPLY

The problem of Peoples Gas Light & Coke Co. in handling the natural gas which will flow to the Chicago area from the Texas Panhandle fields through the $75,000,000 pipe line now nearing completion is, says the Wall Street Journal, primarily one of building up its load factor on this gas to a point where it will meet the minimum "capacity charge" or rental for use of the pipe line investment which will be imposed beginning in 1935. Until that year rental will be based on maximum day's delivery during the year.

At present Peoples Gas uses coke oven gas (whose production is practically a continuous process) to take care of its base load, and uses water gas, whose production can be quickly adjusted to demand, for its fluctuating load. This water gas will be replaced with natural gas, which has about double the former's heating value or 1,000 B.t.u. a foot against 500.

Of the approximately 43,000,000,000 feet of gas sold by Peoples Gas last year, about 29,000,000,000 feet consisted of coke oven gas and about 14,000,000,000 feet of water gas.

These water gas sales, in terms of heating value, would be about equaled by 7,000,000,000 feet of natural gas. This initial volume of sales the company estimates will have to be increased 2½ times, or to about 17,500,000,000 feet annually by 1935, while the load factor on natural gas used will have to be increased to 70 per cent from 40 per cent on water gas now. This program will be carried out through efforts to obtain industrial gas business having a high load factor; through development of offpeak demand; and through sales for house heating. Coke oven gas production will continue as before, and this gas will be mixed with natural gas in such proportions as to give a heating value of 800 B.t.u. per foot against 530 B.t.u. at present.

Costs Compared

On the basis of its output in 1930, Peoples Gas estimates that natural gas if available last year would have cost it 51 cents per 1,000 feet of 1,000 B.t.u. at Joliet, of which 45 cents, or almost 90 per cent would have represented rental for use of line under rental terms which will prevail until 1935, and the balance of 6 cents would have represented charge for the gas actually used. The cost of natural gas at Joliet under 1930 conditions would, therefore, have been a little more than the cost of 50.5 cents per 1,000 feet for the water gas actually used by the company.

Again, on the 1930 output basis, Peoples Gas would have paid more than $3,500,000 for natural gas taken by it from the pipe line company, of which more than $3,000,000 would have represented a rental charge, and only a little over $400,000 the actual cost of the gas. In addition, of course, the pipe line company will sell gas to Public Service Co. of Northern Illinois and to other Insull companies in the Chicago area.

When the pipe line deliveries approach its capacity and it is delivering, say 150,000,000 feet a day as against capacity of 175,000,000 feet, annual "capacity charge" or rental on basis of $5.53 a month or $66 a year per 1,000 feet will be $10,000,000 and cost of gas delivered will be more than $3,250,000 a year, or a total annual pipe line revenue of better than $13,250,000, payable by the gas utilities in the Chicago area. While this figure when attained will more than cover annual charges for writing off the $75,000,000 pipe line investment in 15 years, together with operating expenses and say a 6 per cent return on the investment, this margin will be required to compensate for deficits after all charges which must be incurred in the early years of the line's existence, during which the demand for natural gas at the consumption end is being built up.

Effect on Rates

The foregoing computation is based on the line rental which will prevail until 1935, in which year a minimum "capacity charge" or rental will go into effect.

While Peoples Gas expects through increased sales of industrial and house heating gas to reduce the cost of all gas produced by and delivered to it to a point where reductions in rates to domestic consumers can be made eventually, such reductions can hardly be in the same full ratio as the drop in cost of the actual gas, for the reason that other substantial cost items intervene between holder and burner.

In 1926, which was the last year the company itemised its cost per 1,000 feet, cost delivered to holders was 33 cents per 1,000 feet of 530 B.t.u. gas. By the time it reached the burners its cost had been boosted another 29 cents to 62 cents, and other items such as taxes, rent and interest amounted to 21 cents, making total cost delivered to consumers over 83 cents per 1,000 feet.

TRACTOR HAS REVOLUTIONIZED THE PIPE LINER'S JOB

Here are welder, pipe hustlers and tractor operator at work in the mountainous region northwest of Los Angeles, Calif. The Cardwell Allsteel Model PT-60 live boom side winch is dropping a joint of 24-inch pipe into place for tying in. The single line and the distance between the load and the track tread stir interest.

MIDLAND-MT. PLEASANT GAS LINE

MOUNT PLEASANT Mich., July 11. Providing no unforseen delays arise, the 43-mile natural gas pipe line being built by the Consumers Power Co. from Broomfield Township, Isabella County, to Midland, in Midland County, in all probability will be completed within 60 days. The construction program calls for approximately 1,100 feet per day and since the work has been under full swing, has not dropped below the established goal.

With a fourth crew on the job three outfits will work east of Mount Pleasant and the fourth west. Gathering line in the field probably will be put in following the completion of the 8-inch carrying main.

TEXAS PIPE LINE CO. LAYS TWO SHORT LINES

HOUSTON, Tex., July 13.—The Texas Pipe Line Co. has begun work on two short branches from its West Texas-Gulf Coast trunk line, one extending from a connection at Houston to Texas City and the other from a connection at Iraan to Texon. The former will be 32 miles of 8-inch pipe and is being contracted by N. A. Saigh Co., San Antonio. The Texon branch will be 26 miles of 6-inch and is being put in by Charles Rayl of White Deer.

These branches are being provided to supply Big Lake oil to the new 5,000-bbl. refinery which the Republic Oil & Refining Co. is completing and putting in operation at Texas City on Galveston Bay. At Texon the new branch connects with properties of the Big Lake Oil Co., an associated company with the Republic Oil Refining Co. The Big Lake oil will be transported to Iraan and by way of the Texas Pipe Line Co.'s trunk system to Houston and thence to the Texas City refinery.

PLAN OHIO GAS LINE

FINDLAY, Ohio, July 13.—The Simms Oil & Gas Co., with headquarters in Belle Center, Ohio, has plans under way for construction of a 33-mile natural gas pipe line in northern Logan County, connecting with the trunk line of the Ohio Fuel Gas Co. near Marion, Ohio. Estimated cost of the new project on which work is to be started soon is $150,000. W. A. Simms is general manager.

OHIO GAS LINE

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EAST TEXAS PIPE LINE PROJECTS UNDER WAY

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., July 13.—The Atlantic Pipe Line Co.'s line, East Texas to the Gulf Coast, will be an arc welded 10-inch from Gregg County in which the Atlantic Oil Producing Co. has been purchasing leases during the past two months, and will connect with tanker loading docks at Port Arthur on the Gulf Coast, where the crude will be loaded out for Atlantic Refining Co. plants on the Eastern Seaboard. Two main line pumping stations will be located along the line, station sites not yet having been chosen. Koch and Fowler of Dallas are now making a survey for the line, the Tobin Aerial Survey Co. of San Antonio making aerial surveys and pictures of several river crossings.

The line will be approximately 180 miles in length, and will be connected to a system of combination 4, 6 and 8-inch gathering lines in the fields, these lines now being constructed to the various leases owned by the associated company. Capacity has not been definitely decided, but will be in the neighborhood of 30,000 or 40,000 bbls. per day.

Tentative plans of the Shamrock Pipe Line Co.'s (Texas Independent Pipe Line Co.) line from Gregg County to the Gulf Coast are materializing and an aerial survey is now being made for the line which will be a 10 or 12-inch, and will perform common carrier service only. Building of this line has been held up for various reasons, and there are still possibilities it may not be constructed.

The Humble Pipe Line Co.'s new 10-inch line from Longview station to Moore station, Louisiana, paralleling its Van-Louisiana 10-inch line, will be ready to run oil about July 15. The company's loops on its 8-inch line from Kilgore to Groesbeck are also practically completed, and will be ready to run oil about the same date. These loops will raise the capacity of the line to around 35,000 bbls. per day. The company has leased considerable steel storage from the Stanolind Oil & Gas Co. at Mexia and will use this line to help fill that storage, as well as running a large amount to Houston.

Sun Oil Co.-Yount Lee Pipe Line Co.'s 10-inch from Gregg County to Beaumont is to be ready for testing between July 15 and 20.

ORDERS PLACED FOR TIOGA-SYRACUSE LINE

PITTSBURGH, Pa., July 13.—Lycoming Natural Gas Co., subsidiary of Standard Oil Co. of New Jersey, has ordered 110 miles of 20-inch line pipe for a line from the newly developed Tioga County natural gas field in north central Pennsylvania, to run northeast to Syracuse, N. Y. Some of the pipe will be furnished in lap weld by Spang, Chalfant & Co., Inc., the balance being seamless, to be furnished by National Tube Co.

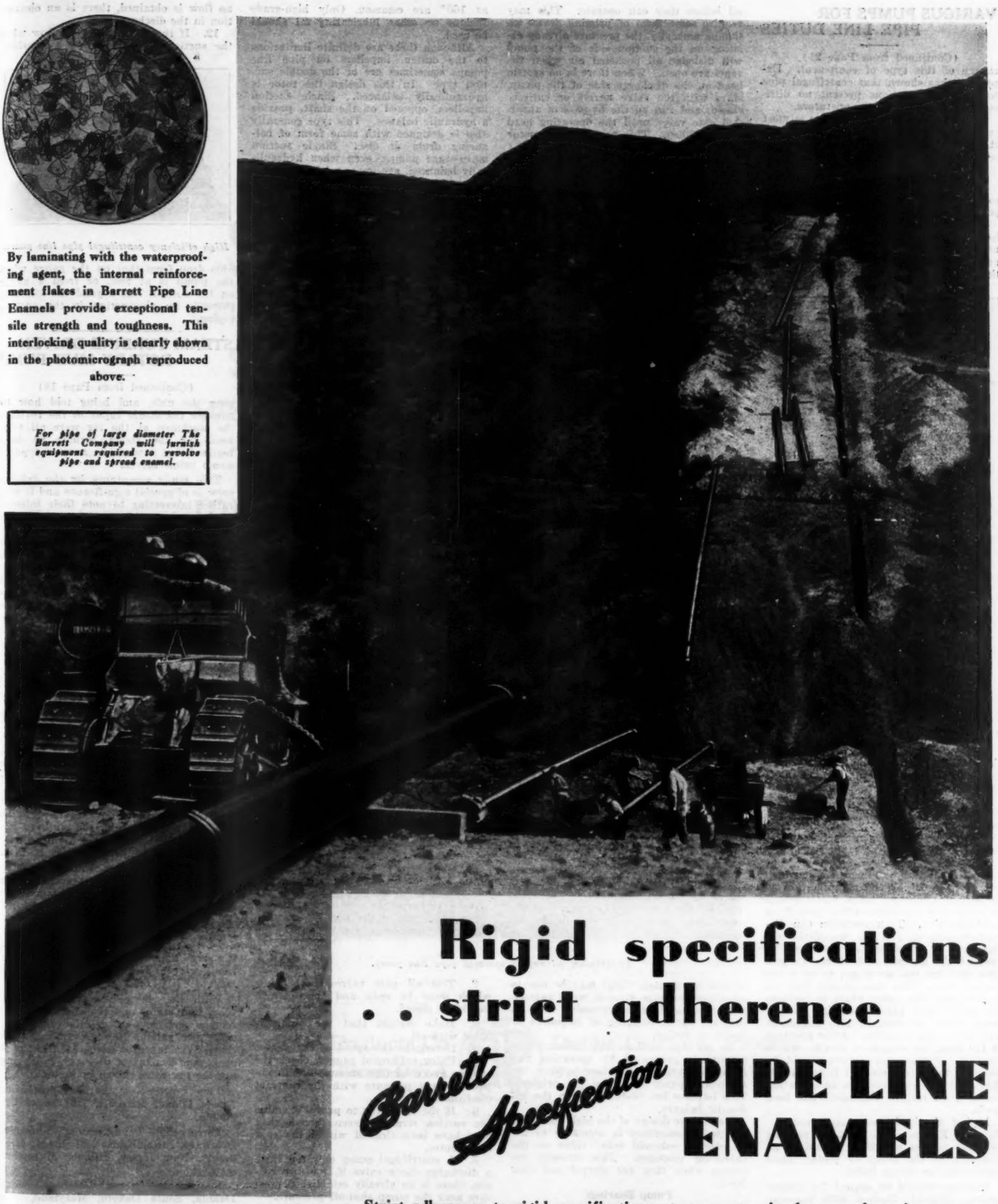
There has been a fair volume of line pipe business placed in the season to date but it has been by concerns that can do their financing themselves. Hopes are entertained that with the much better sentiment expressed everywhere it will become easier to finance other projects.

PERMIT FOR WYOMING LINE

Wyoming Public Utilities Commission has granted C. E. Bivens and others certificate of convenience and necessity to lay a pipe line for natural gas from Baggs structure in southern Wyoming to Laramie. Preliminary work on the 123 miles of pipe line to Laramie is expected to begin at once.

By laminating with the waterproofing agent, the internal reinforcement flakes in Barrett Pipe Line Enamels provide exceptional tensile strength and toughness. This interlocking quality is clearly shown in the photomicrograph reproduced above.

For pipe of large diameter The Barrett Company will furnish equipment required to revolve pipe and spread enamel.



Rigid specifications . . strict adherence

Barrett Specification PIPE LINE ENAMELS

Strict adherence to rigid specifications at every step in the manufacturing process makes the uniformity of Barrett Pipe Enamels absolutely certain. Barrett chemists —trained by long experience—check every batch, at every stage of production. There is a Barrett Specification Pipe Line Enamel to meet every requirement of protection. For specific information on any Barrett Anti-Corrosion Product, phone, write or wire.

The Barrett Company

40 Rector Street New York, N. Y.

VARIOUS PUMPS FOR PIPE LINE DUTIES

(Continued from Page 21)

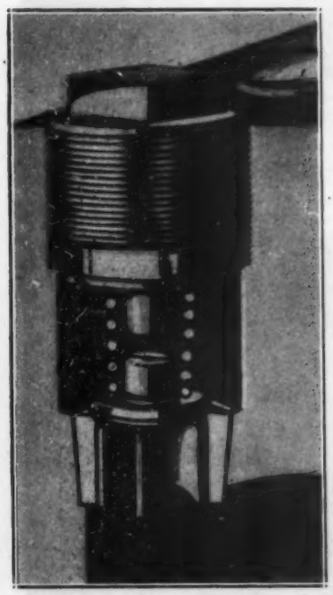
charge of this type of equipment. Experience has shown that centrifugal pipe line pumping stations present no difficulties whatsoever to the operators.

In some locations motor drive is most suitable, in others heavy-oil engine drive through reduction gears is the logical selection.

Handling Centrifugal Pumps

Following are certain important details to observe in the handling of centrifugal pumps and motors:

When received at the site they must be protected against weather, oil, dampness and overheating. As they usually are put in service just as received from the manufacturer and not assembled at



Valve group.

the station, they should be kept in condition by turning over at regular intervals.

It must be impossible for foreign materials to lodge in any part of the motor, pump nozzles or vents.

The manufacturer's instructions must be clearly understood and followed.

It is a common error to assume that a centrifugal pump and motor unit which has been tested by the manufacturer is in perfect alignment when received and is ready for operation when placed on its foundation. Transportation can disturb alignment, and all baseplates are flexible. It is important, therefore, to support the baseplate as evenly as possible and immediately adject to the foundation bolts. The base should then be leveled until the pump shaft is horizontal, after which the motor with its coupling should be brought into alignment with the pump coupling. After grouting in the base, the alignment finally can be checked. Pumps and motors should be dowelled to their bases. It is best to do this after the unit has been in operation and a final test of alignment has been made.

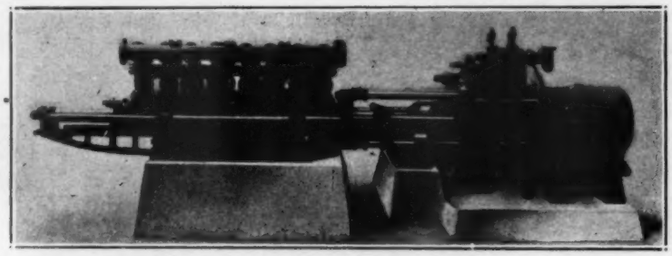
Piping should be supported and anchored. Flange faces must be parallel to pump nozzles and there should be no straining of the pump or piping when tightening the flange bolts.

Bearings should be opened for examination; cleaned; flushed with kerosene if necessary, and filled with lubricating oil. Before finally coupling the motor to the pump, the latter should be tested for direction of rotation. Both pump and motor must freely turn over either by hand or by using fabric pipe tongs. The stuffing boxes should be packed with approved forms of braided or foil packing.

Starting the Pump

Centrifugal pumps must be filled with oil before they can operate. This may require some form of priming device although normally, the pressure already existing on the suction side of the pump will dislodge all pocketed air when the vents are open. When there is no system head on the discharge side of the pump, start with the valve nearly or entirely closed, and run on the by-pass or throttled gate valve until the operating head is established. This protects the motor against overloading.

Make certain that the bearings are being properly lubricated. Note, as quickly as convenient, the suction and discharge pressures and ammeter reading. This will be a valuable record should difficulties be encountered later.



Steam operated compound duplex oil line pump.

In a new installation, be prepared to clean the suction strainers at frequent intervals. Strainers sometimes are installed to provide clean oil for internal bearing parts of the pump. Examine these frequently until certain that all deposits of grit and sand are removed. To avoid failure of this special supply, the strainers also should be periodically examined thereafter.

Overloading of the motor may result from a low discharge head; undue tightness of glands; internal friction; errors in hydraulic balance, etc.

No centrifugal pump should be operated if it vibrates. This may be due to misalignment, pipe strains, weak foundation, internal friction, excessive wear on internal parts, clogging of impellers or faults in design.

In oil line stations the pressure frequently is generated by operating two pumps in series. It is best to start the secondary pump and then the primary. This imposes less disturbance on the hydraulic balance.

Due to the design of the high efficiency pumps, it sometimes is necessary to use an electric solenoid relief valve on the balancing passages. This protects the pumps when they are started and shut down.

Pump Bearings

Depending on the type and size of the unit, both journal and ball bearings are used on centrifugal oil line pumps. Journal bearings on these units run on a film of oil, with practically no wear. So long as the pump runs smoothly and alignment is maintained, some excess in the clearance on the upper half of the bearing may be safely permitted. The lubricating oil temperature may be as low as 100° F. and temperatures as high as 160° are common. Only high-grade turbine or other lubricating oil should be used.

Although there are definite limitations to the design, impellers on pipe line pumps sometimes are of the double suction type. In this design the rotor is hydraulically balanced. Sincle suction impellers, opposed on the shaft, provide a hydraulic balance. This type generally also is designed with some form of balancing drum or disc. Single suction multi-stage pumps, even when hydraulically balanced, are improved by the utilization of some one of the well known forms of thrust bearing.

It should be remembered that hydraulic balance is not necessarily constant over the entire capacity range of the pump.

In addition to protecting pumps against end thrust and damage, properly proportioned thrust bearings permit a latitude in design which contributes to higher efficiency. This fact is taken advantage of by pump designers.

Points for Operators

Following are some of the more important points that should be remembered by oil line pump operators:

1. When reporting difficulties, make certain to report the facts so far as possible from personal observation.

Installation oil engine operated pipe line pump.

2. Test all gate valves, both those which must be open and those which should be closed.

3. Make certain that the pump is filled with oil.

4. Determine the speed of the motor.

5. Using calibrated gauges, check the suction and discharge pressures and compare the net pressure with the contract conditions.

6. If the unit fails to pump, examine the suction strainers even though they may have been cleaned within the past 30 minutes.

7. A centrifugal pump may not raise a discharge check valve if, for any reason, there is an already established pressure near the pump shut-off pressure.

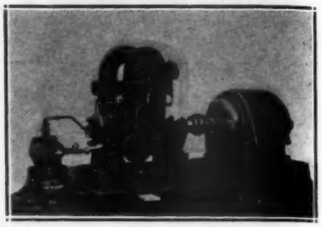
8. Compare the grade of oil being pumped with the contract conditions.

9. Even with care it is possible for the impellers to become clogged with wood or other foreign foreign materials. Lift the upper half of the pump casing, examine carefully and pass a stout wire along the passages of each impeller.

10. If the speed is low the electrical service should be corrected.

11. If the pressures are correct and no flow is obtained, there is an obstruction in the discharge line.

12. If there is little or no flow when the suction pressure shows a considerable drop from that on the gauge when the pump is at rest, or from a gauge on the suction line beyond the strainer, there is an obstruction in the suction piping.



High efficiency centrifugal pipe line pump.

STEAM TURBINE DRIVEN ROTARY MUD PUMP

(Continued from Page 18)

ping the unit, and being told how to throttle the steam input to the turbine, the workmen at the rig were all very keen for the steam turbine as they realized that it was just another type of steam prime mover.

This ready acceptance by the drilling crew is of special significance and it was rather interesting to note their interest in the steam turbine and hear their suggestions that it should be tried out as a prime mover for the rotary drawworks and it is possible that something of this kind may be later developed.

The full report of economies effected by the turbine-slush pump unit to be made by the A.S.M.E. committee will be of much interest to the industry and it is hoped that they will be available for distribution some time within the next two months when all details of this very interesting test will be made public.

SIX STATES NOW HAVE 6-CENT GASOLINE TAX

The Tennessee state gasoline tax was increased from 5 to 6 cents effective July 1. Distributors in that State advanced their tank wagon and service station prices 1 cent on that date. The State was the eleventh to advance its gasoline tax rate this year and the sixth to impose a levy of 6 cents. On the same date North Dakota advanced from 3 to 4 cents.

The industry narrowly escaped its first 8-cent state tax last week when the Florida house of representatives refused to pass the bill providing for the increase from 6 cents after it had passed the senate by a vote of 20 to 17. If the 8-cent tax law had been effective the extra funds were to be used to defray a state debt of $1,154,000.

With the changes made so far this year, four states and the District of Columbia now levy a gasoline tax of 2 cents per gallon, 10 states a tax of 3 cents, 17 a tax of 4 cents, 11 a tax of 5 cents, and 6 a tax of 6 cents. Following are the tax rates shown by states:

Two cents—New York, Connecticut, Rhode Island, Missouri, District of Columbia.

Three cents—Pennsylvania, California, Delaware, Iowa, Kansas, Michigan, Minnesota, New Jersey, Illinois, Massachusetts.

Four cents—Oregon, Colorado, North Dakota, South Dakota, Maryland, Alabama, Indiana, Nevada, New Hampshire, Texas, Utah, Vermont, West Virginia, Wyoming, Nebraska, Ohio, Wisconsin.

Five cents—Kentucky, Idaho, New Mexico, Arizona, Montana, Washington, Louisiana, Mississippi, Virginia, Maine, Oklahoma.

Six cents—Florida, North Carolina, Arkansas, Georgia, South Carolina, Tennessee.

Suppose a refiner could get crude oil for nothing*

Suppose straight-run gasoline was the best in the world**

The refiner couldn't make much of it because the fuel oil would soon drown him

There is too much fuel oil today You can't sell straight-run gasoline at the market either

The sensible thing is to crack the fuel oil into anti-knock gasoline You can sell that

Especially if it is Dubbs cracked

*He can't
**It isn't

Universal Oil Products Co
Chicago, Illinois U S A

Dubbs Cracking Process
Owner and Licensor

Would Shut Down Oklahoma City Field

Majority of Operators in Field Petition Corporation Commission and Governor for an Order. Record Production

By W. A. Spinney
Staff Correspondent, Oklahoma Fields

The oil production from Oklahoma increased approximately 40,500 bbls. a day over the previous week's gauges for the week ending July 11. The State's production for the same week, was approximately 631,900 bbls. a day. The large increase was due to the Oklahoma City Field which recorded new production records, when it averaged 259,340 bbls. a day, for the same seven days. These production records are expected to fall next week when it is predicted the production will return to normal. The State's allowable is only 550,000 bbls. a day.

Operators of the Oklahoma City Field at a meeting held in Oklahoma City, July 10, voted to petition the Oklahoma Corporation Commission and Governor Murray, to shut down the producing wells in the capital city field. The final vote showed 73 favoring the resolution, 3 voting against it, and 26 not voting.

The operators also voted to petition the governors of the States of Oklahoma, Kansas, Texas, Arkansas, Louisiana and New Mexico to take steps to shut down all wells in their respective states for an indefinite period.

The action of the operators was the first step made to bring about a curb on the flood of crude oil which now engulfs the oil industry and has caused the price to fall to the lowest figure in the history of the Mid-Continent area. The Oklahoma City operators passed a resolution favoring a complete shutdown of all oil production until oil goes to $1 a barrel. No calendar time limit was set on this shutdown period.

The meeting was held in Oklahoma City at the call of W. N. Stokes, chairman of the local operators committee. Companies voting against the plan were Sinclair Oil & Gas Co., Champlin Refining Co. and Wilcox Oil & Gas Co. The Shell Petroleum Corp. voted against the measure, but the vote was withdrawn and the company recorded as not voting.

A survey of the field operations indicated that 12 companies and operators shut their producing wells down Friday. They were Tom Slick Oil Co., John Mabee, Jack Shaffer, Inc., Coline Oil Co., Dengail Oil Co., Denver Producing & Refining Co., Plains Petroleum Co., Donleon Oil Co., Acme Oil & Gas Co., Anderson-Prichard Oil Corp., Heenan & Coe, and Reynolds & Unruh.

Some of the largest operators in the field voted for a shutdown in addition to those already shut down. Among these was the Phillips Petroleum Co. which has the largest potential production of any company operating in the Oklahoma City Field. The other large producing companies in the field including the Indian Territory Illuminating Oil Co., Empire Oil & Refining Co., Wirt Franklin Petroleum Corp., and Cromwell-Franklin Oil Co. did not vote since the company executives have not had a chance to act on the matter. The Coline Oil Co. did not vote for the shutdown, but the company's wells are shut down for the present.

Petitions Filed

The petitions calling for the shutting down of the producing wells in the Oklahoma City Field was filed Saturday, July 11. The petition to Governor Murray was sent Friday, July 10. In the petitions to the Corporation Commission and to the governor, these officials were asked to take such steps as deemed wise, expedient and proper to bring about cessation of the production of the crude oil in this State until such time as the price advances to such a point that the same can be produced without economic waste and a fair and reasonable price can be obtained for such an irreplaceable product of nature, and for such other relief as may be deemed just and proper.

The Champlin Refining Co. which has been flowing its wells at the rate of 10,000 bbls. a day with permission of the District Federal Court, has been shipping on an average more than 10,000 bbls. a day from the Oklahoma City Field. The largest day's shipment was on July 9, when the company shipped 19,828 bbls. of crude oil from the field. The next hearing will be held on July 28, when the District Federal Court will decide whether or not the injunction shall be made permanent.

Production Increased

The production of the Oklahoma City Field continued high during the first part of the week. Both the production and the pipe line shipments have been at a high rate since the first of July. This is believed to be due to the operators desiring to get their allowable flow out of the way as soon as possible, and it gives the pipe line companies a chance to fill their quotas as quickly as possible. Due to the increased flow for the last four days in June, the month of July started with an underproduction, as the allowable was increased to 10 per cent of the potential. The present allowable during the month of July is 8 per cent of the potential.

During the week three companies operating in the Oklahoma City Field have asked the Oklahoma Corporation Commission to give their wells in the field new potentials. The companies filing the petition were Anderson-Prichard Oil Corp., Phillips Petroleum Co. and Indian Territory Illuminating Oil Co.

The companies with offset production to the Champlin Refining Co.'s wells in the Oklahoma City Field have petitioned the corporation commission to test the wells to determine whether there has been drainage.

Largest Well in Field

Phillips Petroleum Co.'s No. 1 McBeth, SW cor. NW SE NE, Section 10-11-3w, was given a potential test and made 4,548 bbls. of oil in one hour and 15,091 bbls. in four hours, giving the well a potential of 90,557 bbls. The gauge gives this well the largest potential among the huge gushers in the field.

The reason for the large flow is believed to be due to the fact that only one string of casing is in the well, it being 9-inch instead. It is believed the operators plan to insert a submerged pump at the bottom of the hole when it becomes necessary to pump the well. The Phillips Petroleum Co. has several other producers with 9-inch casing landed as the only string of pipe in the hole. Wells completed with large-sized casing permit a larger flow of gas and a larger volume of fluid to escape from the casing. The majority of wells in the field are completed with 6-inch casing.

The pipe line shipments from the Oklahoma City Field reached a new peak July 9, when the total was 253,261 bbls. of oil. The increase in the shipments was due to increased deliveries by the Stanolind Crude Oil Purchasing Co. and the Continental Oil Co.

Wells Reclassified

Five wells in the Oklahoma City Field were reclassified and new potentials were granted on a number of wells by the Oklahoma Corporation Commission after hearings July 9. The Indian Territory Illuminating Oil Co. had oil wells reclassified as gas wells. They were No. 1 Thomas-Farley, No. 2 Verne, No. 2 A. Brokaw and No. 1 Fortson-Farley. The Phillips Petroleum Co.'s No. 1 Traders Compress, SW cor. Section 36-12-3w, the most northeasterly well in the Oklahoma City Field, which has been producing as a gas well, was reclassified as an oil well.

New potential tests were granted on the following wells in the Oklahoma City Field. The Indian Territory Illuminating Oil Co.'s No. 1 Spillman, No. 2 M.-K.-T., No. 3 Mae Knox, No. 1 Wilke-Anderson, No. 1 Johnson, No. 14 Lillie Jones, No. 1 Wheeland and No. 9 Johnson. Sinclair Oil & Gas Co.'s No. 1 Vencl is also permitted to take new potential, and the Phillips Petroleum Co.'s No. 1 Kleineggar and No. 1 Mosey.

The Corporation Commission also granted the Capitol Producing & Refining Co.'s No. 1 Refinery to produce as a gas well in order to use the fuel at the company's local refinery close to the well.

52,000-Bbl. Well

The Rajah, Inc.'s No. 1 Davis, NE cor. SW NW NW Section 2-11-3w, was completed and given a potential gauge. The well made 8,705 bbls. of oil in four hours with an estimated 40,000,000 feet of gas a day. The well has served its 65-day shutdown time and will go on regular production at once. On a 24-hour basis the well could produce 52,230 bbls. The oil was found in the Wilcox sand at 6,223-84 feet.

Will Deepen Discovery Well

The announcement that the Indian Territory Illuminating Oil Co. was going to plug back the discovery well in the Oklahoma City Field is the first activity in more than a year and half at the well. It was completed on December 4, 1928, in the Silicious lime at a total depth of 6,624 feet. The well is No. 1 fee, C SE SE, Section 24-11-3w. It is believed the well drained all of the 40-acre lease and it has declined to 229 bbls. of oil a day on the last potential gauge, with about 4,000 bbls. of water a day. Because of the many engineering difficulties found in drilling the 6,500-foot tests, the Indian Territory Illuminating Oil Co. has used the discovery well as an experiment in many of these tests. It is believed this has run the recovery cost to a high figure, but it is thought the oil recovered has paid for all the costs, and also nearly all the earlier expenditures in the field. The total recovery from the well was 1,036,778 bbls. The shallow gas horizons are found at 4,800 feet and at 4,000 feet.

The Phillips Petroleum Co.'s No. 1 McBeth, NW cor. SW NE, Section 10-11-3w, on the west side of the Oklahoma City Field was opened for a potential production test and made 15,091 bbls. of oil in four hours. On a 24-hour test at the same rate the well would have a potential of 90,547 bbls. a day, which would make it one of the largest producers in the State of Oklahoma. The well has been shut in for 81 days because it overproduced while it was being completed. The regular shut-in time is 65 days.

Following peak production for the last several days the Stanolind Pipe Line Co. increased its shipments from the Oklahoma City Field approximately 6,000 bbls. a day. No announcement was made as to how long the increased shipments would be maintained. The company is

WILDCAT OPERATIONS IN OKLAHOMA

(Descriptions are East and North unless marked otherwise)

NORTHERN OKLAHOMA

ALFALFA COUNTY

Company, farm and location—	Remarks:
Smith Brothers' No. 1 Forbes, SE cor. NW NW Sec. 12-27-11w	Shut down 1,232 ft.
J. W. Bizley's No. 1 Acre, SW cor. NE Sec. 14-24-11w	Shut down 5,502 ft.

ATOKA COUNTY

Campbell's No. 1 Baird, NW NE SW Sec. 31-1-13	Rig.
Moyer et al's No. 2 Miller, SW NE NW Sec. 26-1-14	Abandoned 443 ft.
Edgerton Edwards' No. 2 Rowland, SE NE NW Sec. 6-1-15	Rig.

BECKHAM COUNTY

Price-McFann's No. 1 Webster, C SW SW Sec. 34-8-26w	T. D. 2,344 ft.; plugged back to 1,890-1,900 ft.; 1,500,000 ft. gas
Mid-Continent's No. 1 Schaff, C NE SW Sec. 22-11-22w	Waiting on cement to set 420 ft.
Mid-Texas Co.'s No. 1 Sidell, NE cor. SW SW Sec. 17-2-11w	Shut down 2,550 ft.
White et al's No. 1 Green, SW cor. Sec. 34-10-24w	Shut down 3,575 ft.

BLAINE COUNTY

Washoma Oil Co. et al's No. 1 Phillips, C NW SW Sec. 13-19-10w	Shut down 5,115 ft.

CADDO COUNTY

Abernathy & Brown's No. 2 Houston, Sec. 24-6-13w	Shut down 1,115 ft.

COAL COUNTY

McCraw Oil Co.'s No. 1 Ward, NE SE Sec. 35-1-8	Drlg. 1,700 ft.
Whitney et al's No. 1 Miller, SE NE Sec. 10-2-8	Shut down 760 ft.

COMANCHE COUNTY

G. W. Stogner's No. 1 Doebel, C SW SW Sec. 3-3-9w	Shut down 1,450 ft.

LE FLORE COUNTY

H. E. Dowd et al's No. 1 Unknown, SE NE Sec. 17-3-22	Drlg. 125 ft.

GARFIELD COUNTY

E. L. Love et al's No. 1 White, SE cor. NW, Sec. 9-24-6w	Shut down 5,850 ft.

GARVIN COUNTY

Malarnee et al's No. 1 Phillips, NE SW SE Sec. 24-2-2w	Shut down 4,800 ft.
Skinner's No. 1 Elrod, SW cor. Sec. 13-2-3	Shut down 1,120 ft.

GREER COUNTY

Dovell et al's No. 1 Capell, NW cor. Sec. 1-7-22w	5,000,000 ft. gas 1,455-65 ft.; T. D. 1,760 ft.
French's No. 1 Murphy, SW NW Sec. 23-7-21w	Shut down 1,645 ft.

HARPER COUNTY

Sinclair Oil & Gas Co.'s No. 1 Howell, C SW SW Sec. 14-26-24w	30,000,000 ft. gas 5,350-5,400 ft.; total depth 5,539 ft.; shut down; sprayed 50 bbls. gasoline.

HASKELL COUNTY

Holden et al's No. 1 Ellis, CWL NW NE Sec. 1-9-18	Abandoned 940-70 ft.; water.
Bowers Oil & Gas Co.'s No. 1 Black, Kent Townsite, SE SW SW Sec. 31-8-20	1,000,000 ft. gas 710-50 ft.
Ault et al's No. 1 Harrison, CWL SE NE Sec. 14-9-19	Shut down 650 ft.
Ault et al's No. 1 Hall, NW SW SW Sec. 14-9-19	Shut down 2,000 ft.
Ault et al's No. 1 Hall, SE NW Sec. 25-9-19	Shut down 200 ft.
Holden's No. 1 Phillip, SE cor. Sec. 3-9-18e	Shut down 1,860 ft.
Marion Oil's No. 1 Sanders, NW NE NW Sec. 10-9-18e	Shut down 2,287 ft.

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now handling around 50,000 bbls. a day. The other pipe line companies in the field have been running above their quotas during the last few days, but crude oil has been going into field storage. The peak of production is expected to be passed by the middle of the month but the pipe lines will continue to carry large shipments throughout the month.

Greater Seminole Production

The production from the Greater Seminole area for the week ending July 10 was approximately 162,285 bbls. The first 12 pools listed below comprise the Seminole area, which averaged 112,195 bbls.

Pool—	Bbls.
Little River	21,545
East Little River	4,560
Carr City	12,515
Maud	2,175
Mission	5,930
Bowlegs	13,745
Earlsboro	17,390
South Earlsboro	4,326
East Earlsboro	15,365
Seminole	12,610
Searight	615
East Seminole	1,420
Total	112,195
Allen	11,365
Asher	625
Wanette	6,001
Konawa	8,989
Sasakwa	2,010
St. Louis-Pearson	21,100
Grand total	162,285

Oklahoma City Shipments

The total shipments from the Oklahoma City Field for the week ending July 11 were 1,623,490 bbls. including the tank car shipments. The shipments by companies were as follows:

Company—	Bbls.
Champlin	89,386
Continental	103,476
Empire	408,515
Magnolia	34,972
Oklahoma	72,903
Operators	11,729
Prairie	11,067
Shell	71,509
Sinclair	336,183
Stanolind	347,600
Tidal	16,693
T. T. I. O.	77,210
Petroleum	3,616
Crude O. P. L.	15,058
Century P. L.	25,999
Capital	7,574

The daily production and pipe line shipments from the Oklahoma City Field for the week ending July 11 were as follows:

Date—	Prod.	Wells	Shipments
July 5	107,673	73	201,729
July 6	246,163	97	201,237
July 7	322,844	133	223,636
July 8	297,586	141	220,624
July 9	243,421	141	253,261
July 10	295,075	144	259,448
July 11	253,868	119	263,457

Big Well in West Chandler

Another large well was completed in the West Chandler Pool, in Lincoln County, during the week. Stanolind Oil & Gas Co. and Tom Slick Oil Co.'s No. 4 Kentzelman, NE cor. SE SW Section 7-14-4, made 475 bbls. of oil in the first four hours. The oil was found in the Wilcox sand at 4,970-96 feet where it was shut down to erect additional storage tanks. The same company's No. 3 Kentzelman, SE cor. NE SW Section 7-14-4, which extended the production a quarter of a mile to the west, was completed a week ago for 4,810 bbls. of oil a day and was still making 250 bbls. an hour.

A new gas area was found during the week on the east side of Hughes County by a wildcat test. Perrine and others' No. 1 Estes, NW cor. SW SE Section 15-5-11, was estimated to be making 3,000,000 feet of gas from a shallow sand found at 1,222-26 feet. The test is located on a block of 1,400 acres owned by the Amerada Petroleum Corp. and others. The acreage was farmed out to the operators with the expectation of drilling a number of tests on the acreage. The nearest production is several miles to the west.

The Gypsy Oil Co.'s No. 5 Walker, C NE SW SE Section 5-7-7, in the Little River Pool, in Seminole County, flowed 147 bbls. of oil in 24 hours from the Cromwell sand at 3,220-42 feet.

A new location was announced by Lou Meyers and others' No. 1 Meyers, NE cor. SE SE Section 21-5-6, Pontotoc County.

In Southern Fields

Another location in the Tatums Pool was preparing to start operations. The K. D. Oil Co. and Frank Gouin's No. 1 M. E. Burton, C S half SW Section 30-1s-2w, was the only active operation in the Tatums Pool. It will be drilled with rotary tools and is located on the southeast edge of the production in the field.

The only other test expected to get under way in the near future is Cox & Hamon's No. 1 Ratliff-Spears, NW cor. SW Section 19-1s-2w, a south offset to the Carter Oil Co.'s No. 2 Robb, which was completed a few weeks ago for 1,210 bbls. of oil a day.

The K. D. Oil Co. and others' No. 1 J. W. Burton, C SW NW Section 30-1s-2w, a new producer in the southern part of the field was still shut down under the proration plan. The operation did not complete the 24-hour initial gauge, estimated at 500 bbls. a day, from sand at 2,191-2,214 feet. Magnolia Petroleum Co.'s No. 1 Wirt Franklin, SW cor. NW NE Section 30-1s-2w, three-quarters of a mile northwest of production in the Tatums Field, was abandoned after plugging back. The total depth of the test was 2,700 feet and the sand at 2,505-41 feet was tested.

In the Healdton area of Carter County the Monarch Petroleum Corp.'s No. 1 Gregg, SW cor. Section 36-3s-4w, a mile west of production in Healdton Field, was shut down at 3,390 feet in lime. It may be drilled deeper.

In the Duncan area of Stephens County Paul Turner and others' No. 1 W. M. Andrews has resumed operations at 2,900 feet, after being shut down for about 10 days. H. J. Brown and others' No. 1 Hightower, SW cor. SE NE Section 15-3s-5w, has also resumed drilling operations at 785 feet.

The seismograph crews that have been working in the western part of Payne, southern Noble and western Logan Counties are reported to be moving from the territory to East Texas. During the last few weeks they were working from 2 to 4 miles west of Guthrie in Logan County.

Southeast of Tulsa, O. N. West and others' No. 9, NE cor. SW SW, Section 1-18-12, Tulsa County, found a deeper pay horizon in the Silicious lime. The well was producing from a total depth of 2,037 feet in the Silicious lime and at 2,378 feet it was estimated to have found 5,000,000 feet of gas. The hole was standing full of water and it was impossible to gauge the flow of gas.

The Pure Oil Co.'s No. 1 Ashby, SE cor. NE, Section 22-7-5, a wildcat test east of the St. Louis Field, in Pottawatomie County, will be abandoned. The well was drilled to a total depth of 4,312 feet in the Wilcox sand and was first plugged back to 4,177 feet. Hopes of making a shallow producer was also abandoned when the company ripped the casing from 3,085-87 feet and again from 3,005-09 feet. It showed some oil and gas and filled up with mud. The last effort at testing the shallower formations was at 2,600 feet and it brought in only water.

Carter County

Carter Oil Co. and others made location for No. 1 Ratliff, NW cor. SW, Section 19-1s-2w. Magnolia Petroleum Co.'s No. 1 Wirt Franklin, SW cor. NW NE, Section 15-1s-3w, has been abandoned at 2,694 feet.

Garvin County

H. T. Skinner and others' No. 1 Elred, SW cor., Section 13-2-3, has been abandoned at 1,120 feet.

Hughes County

Iglehart and others' No. 1 Williams, C SE SW, Section 28-9-10, is dry and abandoned at 3,318 feet.

Kiowa County

J. D. Flanary's No. 2 Renean, SW cor., Section 24-6-18w, has been abandoned at 2,975 feet.

Murray County

C. P. Williams' No. 1 Williams, CNL NE NE, Section 21-1-4, is dry and abandoned at 884 feet.

Noble County

Magnolia Petroleum Co.'s No. 4 Sumner, SW cor. NW, Section 4-20-1w, is drilling at 2,000 feet.

Osage County

Oklahoma Power & Water Co.'s No. 132, NW cor. NE, Section 18-21-9, is running 10-inch casing at 405 feet. Oklahoma Natural Gas Corp. is moving in machine for No. 1,838, NW cor. SW, Section 25-21-11. Oklahoma Power & Water Co.'s No. 131, SW cor. SE, Section 23-20-10, has drilled to 2,638 feet and running 6-inch casing. The Texas Company's No. 1, CNL NE NW, Section 13-24-8, has been completed for 12 bbls. in chat 2,266-70 feet, total depth 2,344 feet. Oklahoma Natural Gas Corp.'s No. 1,836, SW cor. SE, Section 26-21-11, is dry and abandoned at 1,776 feet.

Oklahoma County

Phillips Petroleum Co. has the cellar dug for No. 1 Dehn, NW cor. SW NE, Section 3-11-3w, Oklahoma City Field. Capitol Producing & Refining Co. has the rig up for No. 1 Hills, CSL SE NE SE, Section 4-11-3w. Wilcox Oil & Gas Co. is erecting the rig for No. 1 Lowe, NW cor. NE NW NW, Section 10-11-3w. Morgan Royalty Co.'s No. 1 Stout, NW cor. SE NW, Section 2-11-3w, topped sand at 6,210 feet, drilled to 6,510 feet and made 6,526 bbls. in four hours.

Pawnee County

Clyde Ramsey's No. 1 Dickinson, SE cor. SW NW, Section 1-20-8, is drilling at 620 feet. J. L. Essley and others moved a machine in for No. 1 School Land, SW cor. NE SW, Section 13-20-9. I. F. Hoss' No. 1 Peterman, SE cor. NE, Section 15-20-9, is shut down at 974 feet. M. B. Jensen's No. 1 Tate, NE cor. SE SE NW, Section 9-20-9, has been completed for 500,000 feet of gas in sand 670-77 feet, total depth 703 feet.

Pontotoc County

Meyers & Atkins' No. 1 Myers, NE cor. SE SE, Section 21-5-6, is a rig.

Texas County

Western Production Co.'s No. 1 Gabel Brothers, C NE, Section 24-4-13ecm. has been completed for 8,990,000 feet of gas in sand 2,640-75 feet.

Seminole County

Amerada Petroleum Corp.'s No. 2 L. Tiger, SE cor. SW NE, Section 3-8-5, Carr City Pool, flowed 3,063 bbls. on air from Hunton lime 3,971-4,005 feet and Wilcox sand 4,197-4,211 feet. The Prairie Oil & Gas Co.'s No. 1 Sager, SE cor.

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GOVERNOR STERLING URGES ACTION IN MESSAGE TO TEXAS LEGISLATURE

AUSTIN, Texas, July 14.—Gov. Ross S. Sterling has sent the following message to the legislature which he convened in special session to deal with conservation, particularly affecting oil production:

"To the members of the Forty-second Legislature:

"A grave crisis confronts the State in the conservation of its natural resources. The earth's reservoirs of oil and gas are being drained and virtually thrown away, and enormous underground waste is resulting from the orgy of disorderly production.

"Section 59 of the state constitution declares: 'The conservation and development of all the natural resources of this State . . . and the preservation and conservation of all such natural resources of the State are each and all hereby declared public rights and duties.' . . .

"Aside from these legal public rights and duties, Texas of today owes a solemn moral obligation to Texas of tomorrow not to exhaust and dissipate its resources needlessly so as to deprive oncoming generations of their benefits.

"This applies to soil, water and other mineral resources, with equal force as to oil and gas. The impoverishment and deterioration of the State's agricultural lands, already in advanced stages in some sections, is creating a conservation problem which bids fair in the not distant future, unless checked, to attain distressing proportions, directly affecting the welfare of every farmer in the State whose soil is being sapped of its fertility through erosion and lack of proper rotation of crops. State assistance and counsel, properly directed along proven scientific lines, could do much toward preserving the quality of the soil, and spare the tillers thereof incalculable losses from diminished productivity.

"Existing laws are inadequate to carry out the conservation clause of the state constitution, and in consequence the State is suffering grievously. The oil industry, one of the State's principal sources of wealth, is demoralized and tottering on its foundations; thousands of people, directly dependent upon the industry, are going bankrupt; hundreds of thousands, perhaps millions, of others are feeling the effects indirectly; and the State itself is losing millions of dollars annually in reduced gross production tax receipts—all due to the wanton release and waste of oil and gas which nature has been storing up for thousands of years in the subterranean sands.

"So acute and disturbing has the emergency become that citizens from all over Texas have besieged the executive office with telegrams, letters, petitions, long distance calls and personal visits, urging the convening of a special session of the legislature to cope with the problem. Numerous chambers of commerce, local governing bodies, land, lease and royalty owners, business men and the vast majority of small independent oil men, have joined in the demand, pleading that immediate legislation was the only course that offered substantial relief.

"Not wishing to put the State to the expense and the members to the inconvenience of an extraordinary session unnecessarily, I withheld action for several weeks, hoping that the conservation problem might be worked out through voluntary public effort. However, such effort apparently has proved fruitless; and finally, after many members of the legislature had added their advocacy of a session and the enactment of a conservancy law, I concluded that this course should be taken.

"Accordingly, I submit to your honorable body the matter of enacting legislation to make the conservation clause of the constitution effective. And, since this clause covers 'all the natural resources of this State,' I believe that your legislative program should properly include the conservation of all mineral resources, of the soil and of the waters of Texas.

"The soil is the basic natural resource of the State, and it is being depleted so rapidly that unless remedial steps are taken, the heirs to our agricultural lands a few generations hence will find them a wornout, unproductive legacy. Such already has proved the case in other states where the lands have been cultivated longer, without adequate attention to conservation.

"The public waters, too, are becoming more and more important as a natural resource, as the State grows. More and more they are coming into demand for power, irrigation and municipal use. While we have a water board for their conservation, we should look well to keeping our facilities abreast of the changing requirements of the times, lest we fail to realize the full public benefits of our waters.

"Much study and consultation has strengthened my belief that conservation of our natural resources could best be achieved through a unified program of effort for conserving all natural resources. And so I commend this idea to your earnest consideration, confident of your wisdom to work out a constructive plan that will meet the emergency, give effect to the constitution, and safeguard the State's interest in its natural properties, now and in the future."

Welding of field and refinery storage tanks without limitation as to size and without the use of rivets or bolts for fitting together the shell plates has been successfully developed by the WYATT METAL AND BOILER WORKS. In offering large welded tanks to the trade in which the tightness and efficiency of the welded joint is fully utilized, the Company believes it has rendered a real service to the purchaser.

The 75 units completed and under construction range from 500 barrels to 80,000 barrels and aggregate approximately one million barrels.

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WYATT Welded Tanks pay constant dividends in their freedom from leakage and maintenance costs.

{Patents Pending}

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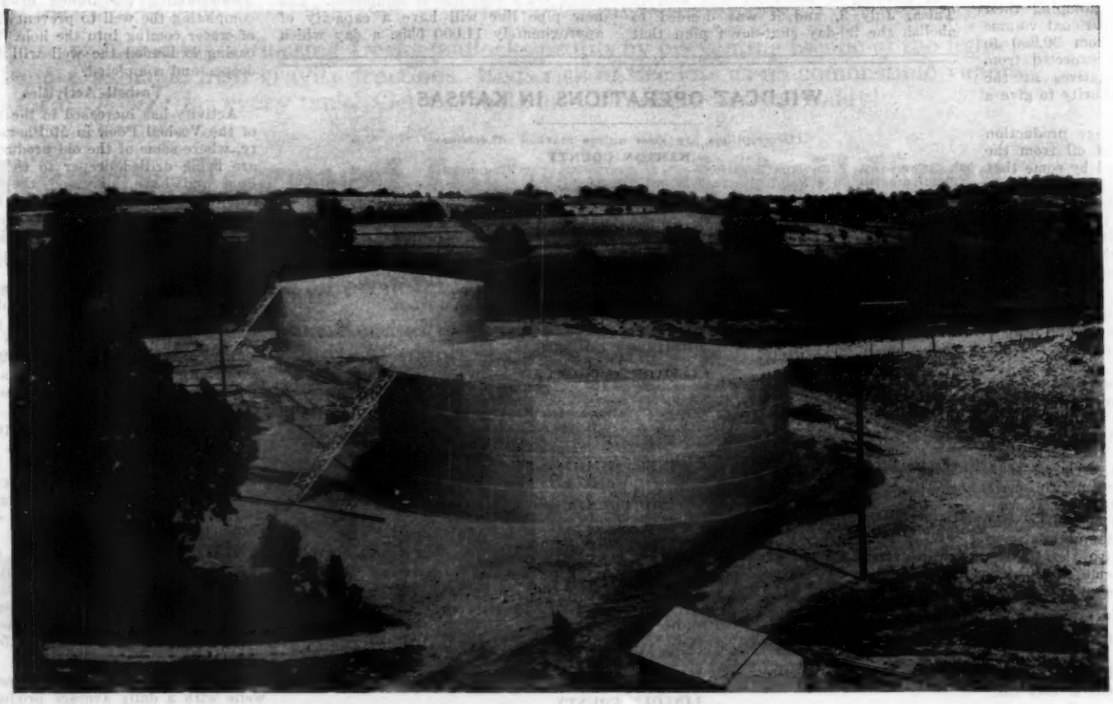

Kansans Vote for Temporary Shutdown

Protest Against the 10 to 22-Cent Price Schedule at a Meeting in Wichita. Deepening Voshell Wells

By W. A. Spinney
Staff Correspondent, Kansas Fields

During the week ending July 11, the production of oil from the State of Kansas was estimated at 101,250 bbls. a day, a decline of approximately 1,600 bbls. from the previous week. The State's allowable has been placed at 110,000 bbls. a day.

An important event in the State's oil history was the meeting of oil producers at Wichita, Saturday, July 11, where it was decided to keep the oil in the ground until a fair price was offered. The producers revolted against being forced to accept an average of 18 cents a barrel for their oil.

Approximately 300 Kansas oil operators at a meeting in Wichita, July 11, voted unanimously to shut down their 22,000 producing wells in scattered parts of the State. These producers, representing 60 per cent of the State's production, passed resolutions for a shutdown as a protest against the price reductions of the major oil companies, which are the lowest in the history of the Mid-Continent area. The present prices range from 10 to 22 cents a barrel.

The producers are determined to stop the flow of oil until a price of $1 a barrel is paid. The shutdown is to become effective July 15. The meeting was the largest gathering of independent oil producers ever assembled in the State. The only objection to a complete shutdown of the 22,000 wells in Kansas, came from the independent refiners, who said such action would cut off their supply of crude, forcing them to shut down their plants.

Represents 62,000 Bbls.

The producers present at the meeting, representing approximately 62,000 bbls. of oil a day, all gave their written promise to immediately stop pumping their wells. Pledges for an additional volume of shut-in oil ranging from 30,000 to 40,000 bbls. a day were expected from oil men whose representatives at the meeting were without authority to give a definite answer.

The present daily average production is around 102,000 bbls. of oil from the 22,000 wells. It is believed by some that the shutdown will effect at least 80,000 bbls. of crude. The potential production of the State is believed to be in excess of 200,000 bbls. of oil a day, but approximately 100,000 bbls. of this amount has been shut in for many months.

It had been planned to ask the Public Service Commission to make an order requiring operators to reduce the output of their wells to 95 per cent of the potential. Thurman Hill, a member of the Public Service Commission, was present at the meeting and promised the State would make every effort to aid the oil operators. Objections of the independent refiners, combined with the fact that several attorneys present declared that such action would be unconstitutional, caused a change in the program. It was decided that the shutdown should be voluntary and that the state oil advisory committee would meet with the Public Service Commission to decide what part the State will play in the shutdown plan.

Protecting Refiners

Among the large producers of oil in the State that joined the shutdown movement were the Phillips Petroleum Co. and the Mid-Kansas Oil & Gas Co. which it was estimated control approximately 14,000 bbls. of crude oil a day. The Mid-Kansas Oil & Gas Co. has a potential of 6,500 bbls. of oil a day and the Phillips Petroleum Co. has a potential of 8,000 bbls. a day.

The Derby Oil Co. and the Vickers Petroleum Co., both independent refiners and producers, said that a 95 per cent shutdown would cut off their crude supply, particularly if they were forced to shut in their own wells. These companies both declared they were in sympathy with the producers and had not met the latest price cut that was posted by the major oil companies. The producers agreed that the refiners that are trying to maintain the old prices in the State should be provided with enough oil to keep their plants running.

Owners of thousands of stripper wells in the southeastern part of Kansas were facing abandonment from the low prices and from salt water intrusion, which makes it unprofitable to operate and produce the oil until the price is raised to $1 a barrel. It was the general opinion that the most of the landowners would rather keep their oil in the ground than sell it at the present low prices. It is generally agreed that oil cannot be produced at fair profit in Kansas at less than $1 a barrel.

In addition to the Derby Oil & Refining Co. and the Vickers Petroleum Co., the following Kansas refiners had not, up to the writing of this review, met the 10 to 22-cent price schedule posted by the major crude buyers: National Refining Co., Kanotex Refining Co., Golden Rule Refining Co., White Eagle Oil & Refining Co., and Eldorado Refining Co.

Ritz-Canton Developments

The field umpire of the Ritz-Canton Pool in McPherson County announced that on July 1 the field had 69 completed wells with a unit potential of 91,629 bbls. of oil a day, and that during the month of July the daily outlet of the field would be 6 per cent of the potential.

A meeting of operators was held in Tulsa, July 3, and it was decided to abolish the 30-day shut-down plan that has been in operation in the field. It was also decided to postpone the taking of new potentials in the field until after the White Eagle Oil & Refining Co. pipe line to the pool is completed.

The operators believed the 30-day shut-in plan might work a hardship on several operators in the district that started wells after March 17, the date the rule became effective. The rule stated that wells drilled and completed after March 17 would be required to shut down for 30 days before going on regular production.

The operators also decided that the present pipe line outlet was too small to permit the taking of potentials. It was recommended on account of the impossibility of the present pipe line facilities to handle a potential production test at all the wells, that the taking of tests would be deferred until additional pipe line outlet was actually available for use in the field. A date for taking the test will be named by the committee. The tests on nonflowing wells will be taken as provided by the resolution adopted at the meeting of June 24. On account of the opposition on the part of producers owning flowing chat wells to the taking of new potential tests a committee of three petroleum engineers will be appointed to work out a decline curve for the flowing wells. The decline curve will be presented to the producers for their approval and tests on flowing wells will be figured on the decline curve, but operators will be given the option of taking an actual potential test by flowing the wells.

The next potential test is expected about the first of August. The operators decided to make the test about two weeks before the White Eagle Oil & Refining Co.'s pipe line is completed. The new pipe line will have a capacity of approximately 11,000 bbls. a day which will give the Ritz-Canton area an outlet of approximately 16,000 bbls. a day.

An Important Well

The first offset to the largest completed well in the Ritz-Canton area is expected to be completed in a few days. The Olsen Drilling Co.'s No. 3 Koehn, SW cor., Section 36-19-2w, on the west edge of developments, was drilling at 2,750 feet. The largest well in the field is G. P. Dickey and others' No. 1, in the SE cor., Section 35-19-2w, which was completed about two months ago for 6,722 bbls. of oil a day from the chat formation. It extended production at the time a quarter of a mile to the northwest. The south offset is being drilled by E. B. Shawver and others' No. 1, in the NE cor., Section 2-20-2w. It was drilling at 1,650 feet on the last report.

Reynolds & Unruh's No. 1 Koehn, SW cor. NE SW, Section 36-19-2w, are preparing to take a potential of the well. It has been estimated from 800 to 1,000 bbls. a day. It is the westerly Viola lime producer in the Ritz-Canton area.

The Lario Oil & Gas Co.'s No. 2 Wiggers, NW cor. NE, Section 36-19-2w, found a showing of oil and gas in the chat from 2,925-57 feet. The test is located on the west side of the field and it will be drilled deeper before a potential gauge is taken.

The twenty-fourth Viola lime producer was found in the Ritz-Canton Field during the week. The Gled Oil Co.'s No. 2 Anderson, NE cor. NE NW, Section 30-19-1w, found the Viola at 3,411-14 feet where the oil rose 2,000 feet in the hole in a few hours. The well is the south offset to the Shell Petroleum Corp.'s No. 1 Sellers, a Viola producer. The crew is underreaming the 5-inch casing before completing the well to prevent the danger of water coming into the hole. When the casing is landed the well will be drilled deeper and completed.

Voshell Activities

Activity has increased in the north end of the Voshell Pool, in McPherson County, where some of the old producing wells are being drilled deeper to the Silicious lime and have increased their output. The wells were completed in the Simpson sand and have been producing for the last year. The first well drilled deeper in the field was the Sinclair Oil & Gas Co.'s No. 2 McCurdy, SW cor. SE SE Section 33-20-3w, which was making an average of 300 bbls. a day from the Simpson sand. When this well was drilled deeper to the Silicious lime it increased its production to 1,200 bbls. a day, an increase of 900 bbls. a day. The Silicious lime was found from 3,327-31 feet.

The same company's No. 10 Morehouse, NE cor. NW NE Section 4-20-3w, was also drilled deeper to the Silicious lime but did not show any increase in production and was then plugged back to the Simpson sand at a total depth of 3,434 feet.

Gypsy Oil Co.'s No. 1 Emma Stuckey, SE cor. SW SE Section 33-20-3w, increased its production 1,100 bbls. a day. Before the well was drilled deeper it was making around 400 bbls. of oil a day and after drilling deeper it made 1,500 bbls. of oil a day.

The Voshell Pool now has 98 producing wells with a daily average production of approximately 11,000 bbls. a day. Proration was lifted in the field February 1, 1931, and since that time it has been producing wide open. The curtailment of the area was lifted when it was found the production had declined to the pipe line company requirements. About a year ago

(Continued on Page 76)

WILDCAT OPERATIONS IN KANSAS

(Descriptions are East unless marked otherwise)

Company, farm and location—	Remarks:
BARTON COUNTY	
Syndicate Oil Co.'s No. 1 Boertz, NW SE SE, Sec. 13-18-12w	Shut down 2,440 ft.
Skelton Oil Co.'s No. 1 Ott, C SE SE Sec. 16-19-14w	Underreaming csg. 2,420 ft.
McCool et al's No. 1 Tsern, NW SE NE Sec. 12-20-11w	Shut down 1,600 ft.
CHASE COUNTY	
Borden et al's No. 1 Atkinson, NW SE Sec. 18-18-7	Rig on ground.
CLAY COUNTY	
Crystal Oil et al's No. 1 Tivier, SW cor. Sec. 19-8-2	Shut down 2,700 ft.
COFFEY COUNTY	
Heyburg's No. 1 Kroft, SE SW SE Sec. 30-22-14	Shut down 1,565 ft.
COWLEY COUNTY	
Fisher et al's No. 1 Hurt, C SW SE SE Sec. 11-34-3	Rig.
DICKINSON COUNTY	
Severs et al's No. 1 Lavengood, NE SW Sec. 13-13-2	Fishing 3,915 ft.
ELLSWORTH COUNTY	
Keyes Bros.' No. 1 Gregory, SW cor. Sec. 23-16-9w	Rig.
Hershoy et al's No. 1 Schultz, C NE Sec. 9-14-8w	Underreaming 3,145 ft.
Alyward et al's No. 1 Stratman, SE NW SE Sec. 1-17-10w	Silicious 3,255-71 ft.; 117 bbls. 2 hrs.; shut in; est. 2,000 bbls.; no pipe line connection.
Aladdin Pet.'s No. 1 Stoddenberg, C SW Sec. 22-16-10w	Silicious lime 3,332-40 ft.; show oil; to swab.
Milton et al's No. 1 Kester, SE NE Sec. 6-14-9w	Drlg. 3,176 ft.
FORD COUNTY	
Carter Oil Co.'s No. 1 Everett, C NE Sec. 22-29-21w	Drlg. 5,126 ft.
Swain et al's No. 1 Taylor, C NW Sec. 21-25-24w	Shut down 5,105 ft.
GRAHAM COUNTY	
Schleimeyer et al's No. 1 Clark, SW NE NE Sec. 11-9-25w	Shut down 4,648 ft.
KINGMAN COUNTY	
Skelly Oil Co.'s No. 1 Miles, NE cor. Sec. 30-27-10w	1,635-40 ft. 2,000,000 ft. gas; at 2,005-20 ft. 6,000,000 ft. gas; at 2,123-42 ft. 3,000,000 ft. gas; showing oil 5,335 ft.; T. D. 5,441 ft.; shut down; estimated at 600 bbls. a day.
HARVEY COUNTY	
J. P. Flannigan's No. 1 Sheridan, C SW Sec. 32-22-1	Rig.
LINCOLN COUNTY	
Buck et al's No. 1 Schulz, C SE NE SW Sec. 19-11-6w	Rig on ground.
MARION COUNTY	
Midwell's No. 1 La Master, NW cor. Sec. 31-22-4	Shut down 650 ft.
MORTON COUNTY	
Hydraulic Oil Co.'s No. 1 State Land, NW SE Sec. 22-34-43w	T. D. 3,640 ft.; shut down.
MORRIS COUNTY	
Urschel et al's No. 1 Bersuch, NW SE NW Sec. 10-17-7	Machine.
Hankerson et al's No. 1 Cessman, SW SE Sec. 24-16-9	Drlg. 2,478 ft.

(Continued on Page 110)

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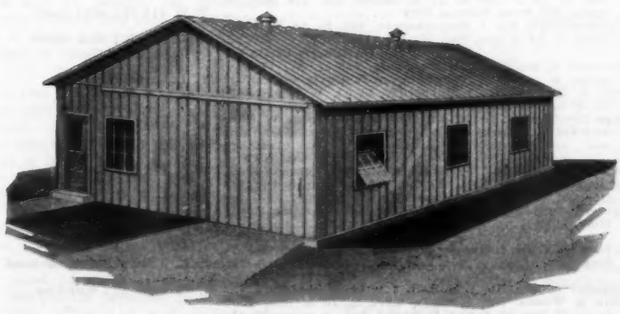

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Pettus Sand Discovery in Bee County

Two Years of Wildcatting in Southwest Texas Has Developed Showings in Pettus Sand Covering Many Miles

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., July 13.—Southern Crude Oil Purchasing Co. and V. F. Neuhaus' No. 1 Pettus, 15 miles northeast of the Pettus Field in Bee County, and on direct line with the Raccoon Bend Field, 100 miles northeast, looks today like an oil well. Total depth is 4,298 feet and the owners are so convinced that it will make a well that they are setting casing at 4,270 feet. Also J. M. Davis' No. 1 Ray, a mile southwest of the Pettus Townsite Pool is in and flowing at the rate of 38 bbls. an hour from total depth of 3,930 feet.

No. 1 Pettus is in Goliad County and was drilled 2½ years ago by the Southern Crude Oil Purchasing Co. to 3,853 feet and abandoned. It was completed before the Pettus discovery, and did not reach the Pettus sand. The plan to deepen was in the hope that it would get production in the Pettus sand. On a drill stem test of sand at 4,282-87 feet it made three joints of oil and considerable gas and one joint of mud but no water, in 10 minutes. It was cored to 4,298 feet but only part of the core was recovered. From 4,282 feet to 4,287 feet it had sand and below that some shale, but failure to recover the core throws some doubt on all it had below the first sand. The first drill stem test was on quarter-inch choke. No. 1 Pettus is approximately 3 miles from the northwest line of Goliad County and on the southwest side of the Cabesa Creek.

Through wildcat drilling in the last year or two the Pettus sand in the Jackson formation has been traced from the Raccoon Bend Field in Austin County through the Pettus Field, down across Live Oak and Duval Counties, through the Mirando district to the Rio Grande in Starr County, a distance of over 300 miles and the probability of another pool on the line between the Raccoon Bend and Pettus heightens the interest in that stretch of territory. So far No. 1 Pettus has not shown for a very big well but seems likely to make some sort of a producer.

New Well in Pettus Pool District

In the Pettus Pool district J. M. Davis drilled in No. 1 Ray and started bailing last Thursday. It was bailed down and allowed to stand over night and started flowing Friday morning. The first half hour it made 80 bbls. of oil and by the middle of the day was flowing 38 bbls. an hour. Total depth is 3,925 feet. It is cut off from the townsite pool a mile away by dry holes and the theory on which the location was made was on the idea of a fault line between it and the field and the geologists' theory seems to have been correct. It means the development of a new pool extending west and southwest. Davis went into the sand early in June when he tested 4 fourbles of oil in 10 minutes and the well has been standing since setting casing waiting for pipe line connection.

Zoch Rebuilding Derrick

F. P. Zoch's No. 1 Dobord in Lavaca County, 3 miles south of Exzell and on a line in the Reynosa outcrop with the Raccoon Bend Field on the northeast and the Pettus Field on the south and almost exactly half way between them, pulled the derrick in last week at 3,920 feet total depth and is now rebuilding it. This test will be watched with equal interest since in another week or so it will be where it should pick up the same sand. The Slick Pool in Goliad, where two producers have been completed and everything shut down is 6 miles northeast of the Southern Crude-Neuhaus' No. 1 Pettus and the discovery well was completed at 4,212 feet.

No. 1 Pettus of the Southern Crude and Neuhaus and No. 1 Dobard of Zoch are the only tests in the entire stretch of country between Raccoon Bend and Pettus.

An Important Completion

The completion of the Carsil Oil & Gas Co.'s No. 3 McGill in Jim Wells County is important. It tested gas and is setting casing and will be ready to be brought in this week or early next week. No. 1 McGill got gas at 2,690 feet, opening a new pool 15 miles from nearest production, but ran wild for two days and it was necessary to plug the hole and abandon. The company then drilled 900 feet north but missed the sand. No. 3 is 450 feet south and 350 feet east of the No. 1 and got the gas sand at the same depth as in No. 1. On drill stem test last Friday it showed for equally as good a well as the No. 1. In the Cartwright or Lucas gas field in southeastern Live Oak County 20 miles to the northeast the Houston Oil Co.'s No. 23 Cartwright at 3,655 feet is equipped with standard rig to pump. The Cartwright Field and the Carsil well, along with the J. E. Walsh's No. 1 Wade located between them and the Mathis gas field, are all on a line about 15 miles nearer the Gulf than the Pettus-Raccoon Bend line and there are now at least six sands proven up in a stretch of about 20 miles. In the Cartwright gas field sands are producing gas from 2,100 to 2,300 feet and have been for several years. Recently the Houston Oil Co. drilled No. 23 Cartwright to 3,565 feet where it is a small oil well and the No. 1-A Boothe to 5,277 feet where it is a small oil well. J. E. Walsh's No. 1 Wade in northeastern Jim Wells is a gas well at 2,916 feet and in the Mathis Field, part of which is in San Patricio and part in Live Oak County, gas was encountered at 2,400 feet.

The only wildcatting now on this line is Grebin & Wood's No. 1 Riggs in Bee County, 8 miles east of the Cartwright Field, which is down around 5,000 feet and drilling and has not encountered anything much.

Corpus Christi District

L. L. Smith added another sand to the Saxet Field this week when he tested his No. 1 Hunter at 3,368 feet and got an estimated 25,000,000 feet of gas with a pressure of 1,350 pounds. There was no oil and no water showing in the test. The Houston Oil Co.'s No. 1 Lawrence which blew out at 2,740 feet is still not completed but within another week or two it is likely to prove up still another sand at that depth. L. L. Smith's No. 1 Hunter at 3,368 feet is about a half mile north of the Houston Oil Co.'s No. 1 Hunter which was the discovery well in a sand at 4,097 feet. Smith drilled it to 5,388 feet and then plugged back. Another half mile north of him Gulf Coast Oil Co. brought in the No. 1 Harrell at 4,095 feet for a good gas volume and lately has deepened to 4,109 feet where it encountered salt water and will doubtless plug back.

Deeper Drilling Unproductive

Extra deep drilling in that field has not been rewarded well. Houston Oil Co. months ago completed the No. 2 Rand Morgan at 4,095 feet for a small amount of oil and considerable gas and lately deepened to 6,375 feet without getting production and has plugged back and will complete at 4,095 feet where it was first brought in.

On the north side of the Nueces Bay, Saxet Oil Co. plugged back on the No. 4 White Point Development Co. after reaching a total depth of 5,750 feet and sidetracked and is now drilling at 3,200 feet.

Fifteen miles north of the White Point Field where the Aransas Oil Corp. brought in a gas well several weeks ago in pure wildcat territory, the Welder Oil Corp. has made location for the No. 1 Welder, 1,500 feet south and 800 feet west of the Aransas Oil Corp.'s discovery well, and Jacob, Buzini and Pickett are rigging up on their No. 2 Baldwin a half mile south of the discovery well. The Aransas Oil Corp.'s No. 1 Welder was a big 40,000,000-foot gas well at 3,634 feet and the two new tests starting in that territory mean a development of the new field.

Kerr-Real Counties

In the Kerr-Real Counties district there was another week of very little progress. The No. 1 Love is now down to 3,950 feet and the Evans & Gant's No. 1 Young is drilling at 1,250 feet and these are the only ones that have made any hole. All others have been standing or otherwise delayed. The No. 1 Love of Evans & Gant got its third sand at 3,500-40 feet and it was estimated to be good for an 8-bbl. well. The first sand was at 2,552 feet and the second at 3,391

(Continued on Page 76)

SOUTHWEST TEXAS PROVEN AREAS

COOKSEY POOL—BEXAR COUNTY

Company, farm and location—	Remarks:
Penn Oil Co.-Sun Oil Co.'s No. 1 Pollock, 1,100 ft. SW of No. 1 Cooksey in John W. Raill Sur.	T. D. 1,420 ft.; reset csg.

DOBROWOLSKI POOL—BEXAR COUNTY

Patton & Yocum's No. 1 T. Strunk, 1,351 ft. from SE line, 150 ft. from NE line of tract	T. D. 727 ft.; installing pump.
W. S. Rogers et al's No. 1 L. Donnop, Juan Montes Sur.	T. D. 612 ft.; shut down.

BRUNER POOL—CALDWELL COUNTY

Joe Bruner's No. 1 Malone, A. Floyd Sur.	T. D. 2,250 ft.; drlg.

LYTTON SPRINGS—CALDWELL COUNTY

J. A. Harper's No. 4 Strawn, 150 ft. from N and E lines of tract in Pablo Martinez Sur.	T. D. 1,540 ft.; shut down.

DARST CREEK FIELD—GUADALUPE COUNTY

Magnolia Pet. Co.'s No. 8 M. T. Klein, 300 ft. SE of No. 1	T. D. 1,600 ft.; drlg.

CHAPMAN POOL—WILLIAMSON COUNTY

Chapman et al's No. 2 Lawrence, S. Miller Sur.	T. D. 1,916 ft.; set 6⅝-in. csg.; waiting on cement.
Vitex Oil Co.'s No. 3 Kilgore, Simon Miller Sur.	T. D. 1,735 ft.; waiting on cement.

PETTUS POOL—BEE COUNTY

Cosden Oil Co.'s No. 2 J. M. Freeland, in John Pace Sur. No. 1	T. D. 260 ft.; set surface csg.
J. M. Davis et al's No. 1 Ray, 330 ft. from N and E lines of John W. Williamson Sur.	T. D. 3,925 ft.; drilled plugs; setting screen.
J. L. Mauldin's No. 1 fee, 1,300 ft. N of S line, 150 ft. E of Medio Creek, Kerr Sur.	T. D. 3,930 ft.; standing.
Geo. N. Moore et al's No. 2 Freeland in John Pace Sur., 1,000 ft. from S line, 600 ft. from E line of survey	T. D. 1,550 ft.; drlg. shale.
United Prod. Co.'s No. 39 Ray, 1,130 ft. to SE line, 2,396 ft. to SW line of T. Hanson Sur.	Rigged up.

CARTWRIGHT POOL—LIVE OAK COUNTY

Houston Oil Co.'s No. 14 Cartwright, 1,000 ft. W of No. 23 Cartwright	T. D. 2,290 ft.; rigging up to deepen.
Houston Oil Co.'s No. 23 Cartwright, 691 ft. N, 30° E of No. 11	T. D. 3,565 ft.; swabbed 77 bbls. in 2½ hours; waiting on pump.

CHITTIM POOL—MAVERICK COUNTY

Texas Gas Utilities' No. 8 Chittim, 24 ft. S of No. 7 Chittim	T. D. 2,900 ft.; drlg.

(Continued on Page 72)

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

ATASCOSA COUNTY

Company, farm and location—	Remarks:
Glen Mathis, trustee's No. 1 Martin, 150 ft. to NE line, 2,640 ft. to SE line of tract in Jose Antonio Navarro Sur.	T. D. 2,012 ft.; fishing.

BLANCO COUNTY

Hardy-Sitton's No. 1 McMillan	T. D. 696 ft.; fishing.
Liles-Adams et al's No. 1 Stanford, 150 ft. to S line, 1,420 ft. to E line of James Stanford's No. 155	T. D. 970 ft.; standing.
McCleary et al's No. 1 Schenling, 900 ft. to SE line, 600 ft. to S line of J. A. Rouse No. 118 Sur., 4 miles SW from Blanco City	T. D. 574 ft.; shut down.
C. Rosenfield's No. 1 Hohenberger, 800 ft. to W line, 1,260 ft. to N line, Sur. No. 94	T. D. 712 ft.; shut down.

BASTROP COUNTY

Schimmel & Batts' No. 2 Ferguson, 632 ft. W, 17 degrees N of No. 1 Ferguson in J. Doyle Sur.	T. D. 1,300 ft.; drlg.
Smith & Barnes' No. 1 Marborger, 50 ft. W line, 1,360 ft. S line of tract in King & Millett Sur.	T. D. 415 ft.; drlg.
Texas Dev. Co.'s No. 1 C. H. Ray, 800 ft. from W line and 400 ft. from S line of farm in Thomas Christian Sur.	Derrick.

BELL COUNTY

Mildon Oil Co.'s No. 1 J. K. Edds, Maxiano Moreno Sur.	T. D. 875 ft.; will set csg.
C. O. Alford's No. 1 A. L. Keifer, 150 ft. from S and W lines of tract in Woodford Sur.	Location.
Vilas Oil Co.'s No. 1 B. F. Whittington, 9 miles E of Holland	T. D. 1,298 ft.; shut down.

BROOKS COUNTY

Ike Howeth's No. 1 Singer, 400 ft. E of Humble's No. 1 Singer	T. D. 2,230 ft.; testing sand.

BEE COUNTY

Alexander et al's No. 1 McFall, 3 miles S Skidmore	T. D. 1,510 ft.; standing.
Grebin & Woods' No. 1 Riggs, 4,800 ft. to E line, 200 ft. to N line of James Nowland Sur., 6 miles W of Skidmore	T. D. 4,215 ft.; coring.
Mauldin et al's No. 1 Kimball, 300 ft. S Grayburg's No. 1-A Kimball, S. Winship Sur.	T. D. 3,544 ft.; fishing.

BEXAR COUNTY

Ingersoll-Mitchell's No. 2 E. B. Carruth, 750 ft. S of No. 1	T. D. 630 ft.; drlg.
Schneider, Rees et al's No. 2 Claussen, 12 miles NE of San Antonio	T. D. 850 ft.; drlg.

(Continued on Page 72)

Find Flank Sand at Markham Dome

Matagorda Test First Activity in Many Months. Southern Victoria County Test May Prove Link Between United and Slick Areas

By Neil Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., July 13.—Gulf Coast fields the past week were feeling the effect of a 13-cent cut in prices, bringing prices to a new low mark since the early flush days of Spindletop when oil almost had to be given away. At the close of the week only the Gulf Oil Corp.'s subsidiaries had not met the reduction, started last Wednesday by the Humble Oil & Refining Co., placing the market for coastal oil at 31 to 42 cents. While the new prices are admittedly below the cost of lifting settled production, late in the week so far as known no move had been made by any operators to close in any of their leases because of the cut. Production on the coast, however, kept up its steady decline and now is at the lowest figure it has been since December, 1928.

Chief among field developments during the week was the finding of a new flank sand at the Markham Dome, Matagorda County, by E. M. Hamill's No. 1 Meyers. This test made a drill stem test of the sand at 3,242-65 feet. In a four-minute drill stem test, this well filled the drill stem and is reported to have flowed over the top. As this is written the well has not been completed so its commercial status cannot be determined. A string of 6⅝-inch casing has been cemented at 3,240 feet to test.

Location of this well is 600 feet from the north line of the tract and 200 feet west of Tres Palacoios Creek, William Hadden Survey. This is on the extreme northeast side of the dome in strictly new territory, the nearest well being Hamill's No. 1 Meyer, 1,200 feet closer in on the dome, which was completed July 12, 1930, flowing 200 bbls. of fluid, 20 per cent water, from a shallower sand at 2,315 feet. The well is approximately 2,300 feet to the east around the dome from some small production on the extreme north flank of the dome.

The drilling of this well marks the first activity at Markham in many months. However, location was made during the week for another test, Ike Laffin and associates' No. 1 W. H. Gray, also located in the William Hadden Survey but on the north flank and near other production. Markham is one of the older domes but development to date has been rewarded only with mediocre success and at present its production runs only around 200 bbls. daily from a group of small pumpers. It is the most westward of coastal domes.

Two Producers

Only two producing completions, one oil and one gas, were reported during the week. At Refugio, in the lower coastal country, Pearson Properties, Inc. brought in No. 5 Ryals on the east edge of the field flowing 200 bbls. pipe line oil from sand at 6,403-17 feet. The flow was through two quarter-inch chokes with a working pressure of 2,000 pounds. In the Edna Field, Chicago-Gulf Co. completed No. 1 Rogers estimated good for 25,000,000 feet of dry gas, 1,530 pounds pressure, from sand at 3,952 feet. This test was drilled several years ago to 3,662 feet by Houston Oil Co. and abandoned. Early this year it was purchased by the present owners and deepened to the present level.

Operators in the lower coastal country late in the week were watching for possible developments in the Bloomington-Marianna district of southern Victoria County, where United Production Corp. was preparing to test its No. 4-A McFaddin, M. Traviesa Survey, which is in sand showing gas at 3,752-62 feet. The 6⅝-inch casing was cemented at 3,714 feet but plug has been drilled and screen now is being run in the hole. This test is approximately a mile to the northwest of the company's Nos. 1-A and 2-A McFaddin, two wildcat gas wells drilled and completed late in 1930 by Lion Oil & Refining Co. Tests to the west, south and east, either have missed the sand or tested salt water, leaving northward the only direction for the field to move. No. 4-A McFaddin is only a few feet lower than the two gas wells, they being in the sand at 3,749 and 3,736 feet respectively.

May Serve as Link

The new test also may serve as a possible link in proving up the area between the United gas wells and T. B. Slick estate's No. 1 McFaddin, J. Vairan Survey, 3½ miles to the north, which has encountered heavy gas pressures in sand below 3,500 feet. The latter is being plugged back from 3,529 to 3,512 feet where another attempt will be made to complete it as a gas well. On two different attempts to bring that well in at 3,512 feet, gas pressures have blown the screen up into the christmas tree connections. On a third attempt to reset screen the hole was deepened accidentally to 3,529 feet and got into salt water. Whether the Slick well and the Lion wells represent two different districts or one large field remains to be proved.

The Texas Company's No. 3 McFaddin, John M. Rine Survey, 4 miles to the west of the United wells, late in the week was drilling below 2,100 feet after having passed the sand in which this company's No. 2 McFaddin blew in as a gas well. The latter was completed early in the year at a total depth of 2,025 feet although the gas came from a sand slightly higher up. It has been shut in since completion because of a considerable water flow which accompanied the gas. No. 3 is a half mile west of the gas well. A drill stem test was made at 2,040 feet but showed dry. This area also has been looked upon as a separate field for southern Victoria County, not only because of the difference in sand horizons but also because a deep dry hole was drilled between it and the United gas wells.

GULF COAST FIELDS AND WILDCATS

Week Ended July 11

All Rotary

BARBERS HILL—CHAMBERS COUNTY

Gulf Prod. Co.'s No. 4 Wilburn (D.D.), Henry Griffith League, 1,400 ft. W line and 50 ft. S line of lease... Total depth 5,290 ft.; sidetracking in shale and lime 5,015 ft.

Humphreys Corp.'s No. 6 E. H. Winfree, W. D. Smith Sur., 50 ft. from N line and 50 ft. from W line of tract ..... Total depth 4,220 ft.; plugged to 3,607 ft. to straighten hole.

Humphreys Corp.'s No. 1 Fitzgerald-Meadows, Henry Griffith League, 50 ft. S and 100 ft. E of NW cor. of tract ..... Blew out while trying to set 4 jts. 7-in. screen at 4,253 ft.; killed gas; pulled screen to reset.

Sinclair Oil & Gas Co.'s No. 3 Smith, W. D. Smith Sur., 50 ft. out of S cor. of tract ..... Drlg. sandy lime 4,925 ft.

Sun Oil Co.'s No. 2 Smith, W. D. Smith Sur., 75 ft. from W line, 50 ft. from N line of tract ..... Drlg. hard sand showing oil 5,350 ft.

Sun Oil Co.'s No. 3 Smith, W. D. Smith Sur., 50 ft. from S line, east offset Yount Lee Oil Co.'s No. 3 Winfree ..... Set 177⅝ ft. 5-in. (O.D.) screen 5,202 ft.; swabbing.

Sun Oil Co.'s No. 1 Anna Higgins, Wm. Bloodgood Sur., 230 ft. from E line and 31 ft. from S line 10-acre tract ..... Drlg. shale 2,396 ft.

The Texas Company's No. 2 Winfree, west flank, W. D. Smith Sur., 264 ft. N. 50 ft. W at right angles out of SE cor. of lease ..... Total depth 5,622 ft.; swabbing.

The Texas Company's No. 4 Wilburn (D.D.), Henry Griffith League, approximately 1,700 ft. from W line and 50 ft. from S line of tract ..... Total depth 5,292 ft.; set 47 ft. 4½-in. screen 5,188 ft.; comp. pumping 77 bbls. net oil, 60% water.

The Texas Company's No. 6 Wilburn, Henry Griffith League, 250 ft. W of No. 4 and 50 ft. from S line of lease ..... Total depth 4,491 ft.; sidetracking 2,950 ft.

HUMBLE—HARRIS COUNTY

Rio Bravo Oil Co.'s No. 2 H.E.&W.T., Adams Sur., 250 ft. N along railroad tract from No. 1 and 25 ft. W from center of said tract ..... Total depth 4,742 ft.; sidetracking in gumbo and lime 3,257 ft.

The Texas Company's No. 25 House (D.D.), M. Owen Sur.. Drlg. shale and boulders 4,698 ft.

PORT NECHES—ORANGE COUNTY

The Texas Company's No. 1 Polk-Kuhn-Glass, 260 ft. E and 1,545 ft. S of SW cor. Marshall Beaucham Sur., in the T. J. Notgrass Sur. ..... Rig.

The Texas Company's No. 3 Kuhn, 587 ft. S and 150 ft. W of NE cor. of the Mary E. Hall Sur. No. 2 .... Location.

MARKHAM—MATAGORDA COUNTY

E. M. Hamill's No. 1 Meyers, Wm. Hadden Sur., 600 ft. from N line of tract and 200 ft. W of W bank of Tres Palacios Creek ..... Sand showing oil 3,242-65 ft.; cmtd. 6⅝-in. csg. 3,240 ft.

Ike Laffin et al's No. 1 W. H. Gray, 400 ft. from S line, 150 ft. E line, Blk. 2, Wm. Hadden Sur. ..... Rigging.

HIGH ISLAND—GALVESTON COUNTY

Yount Lee Oil Co.'s No. 21 Cade, Fitzsimmons Sur., 150 ft. W of No. 17 ..... Drlg. hard sand and lime 4,522 ft.

HULL—LIBERTY COUNTY

Sun Oil Co.'s No. 8 Carr (D.D.), Jesse Devore Sur., 50 ft. from W line and 100 ft. from S line of tract ..... Comp. pumping 50 bbls. fluid 1,890 ft.

Wenesdan Oil Co.'s No. 1 Palmer, Chas. Underton Sur., 150 ft. from N line and 200 ft. from E line of tract.. Shut down 1,667 ft.

NORTH DAYTON—LIBERTY COUNTY

Harrison-Abercrombie's No. 2 Jones, H.&T.C. Sur. No. 125, 50 ft. from N line and 450 ft. from E line of tract ..... Abnd. in cap rock 2,193 ft.

(Continued on Page 74)

However, the lower coastal country has been marked by spotted conditions.

Refugio County

West of The Texas Company operations and just across the Victoria County line in Refugio County, Humble Oil & Refining Co. is moving in a heavy rig for its No. 1 O'Connor, John Keating Survey. Location for this was made during April. The rig is the one used by this company on its deep test recently abandoned in southern Jefferson County and on which a 164-foot derrick was used, the largest set-up on the Gulf Coast. The latter test also is only a little over 15 miles to the northwest of the Refugio Field. Simpson-Fell and Westheimer's No. 1 Levi, S.A.&M.G. Survey No. 4, some 10 miles northeast of the United gas wells, is drilling at 5,360 feet. A drill stem test of sand at 5,094-5,102 feet showed salt water.

Barbers Hill

On the north flank of Barbers Hill, Chambers County, Humphreys Corp.'s No. 1 Fitzgerald-Meadows blew out from sand at a total depth of 4,253 feet but the gas was successfully killed and the hole now is being cleaned preparatory to resetting screen. The blowout occurred as four joints of 7-inch screen were being run into the hole to test. The screen, however, stuck around 3,900 feet. Sun Oil Co. late in the week was swabbing its No. 3 Smith on the west flank of the dome. This test, which is giving indication of making a good well, is in sand at 5,202 feet with eight joints of 5-inch screen in the hole.

South Louisiana

Following the recent reductions in crude, Pure Oil Co. has suspended all drilling operations at its Sweet Lake Field, Cameron Parish. This company has been keeping one rig running and lately has been engaged in pulling screen to deepen its No. 5 Yount Lee Oil Co., a former producer at 5,658 feet, to deepen it to the new deep sand opened by No. 10 at 7,387 feet. Magnolia Petroleum Co.'s No. 2 Sweet Lake, a wildcat east of the Sweet Lake Field, is drilling below 6,660 feet.

Vacuum Oil Co. still is trying to fish out a joint of screen from its No. 1 Waite, a wildcat on the Iowa salt dome prospect, on the Calcasieu-Jefferson Davis Parish line. The test is in a sand at 6,961-79 feet, and in trying to set a one-string job of casing and screen the casing became stuck and efforts to work it loose resulted in a joint of screen being twisted off in the hole. The test gives indication of making a well.

At Hankamer

Gulf Production Co.'s No. 14 Boyt, a north edge test at Hankamer, Liberty County, tested salt water at 4,494 feet, but is drilling deeper in sticky shale at 4,869 feet. Telschaw and associates have resumed operations in their No. 5 Blakely, north side of Blue Ridge, and are attempting to sidetrack the old hole at 2,400 feet preparatory to deepening. The test has been abandoned temporarily at 3,105 feet. The Texas Company's No. 1 L. L. and E., Bay St. Elaine Dome, Terrebonne Parish, Louisiana, has been trying to blow out with bottom of hole at 5,683 feet. This is the second deep test on this dome, which so far has been productive only of two shallow gas wells. Bottom, however, is in shale which is heaving causing loss of 43 feet.

New locations for the week included one by J. P. Hunnicutt on the George E. Haney 730-acre tract, T. Pitching Survey, eastern Harris County, and about 5 miles of the Barbers Hill Field. This is in the vicinity of a deep wildcat drilled some time ago by Martin and associates on the same tract. That test, which was abandoned at 5,919 feet, reported several gas shows.

Killing Shelby County's Large Gasser

New Hole May Be Necessary on This Location. Louisiana-Arkansas Fields Report Few and Disappointing Completions

By J. R. Crumpton
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., July 13.—This division, composed of North Louisiana, Arkansas, Mississippi and the border counties of East Texas, experienced one of the dullest weeks in many months. Only five completions were reported, three in North Louisiana and two in the border East Texas counties, and of these three were dry holes and two were gas wells.

Richland Parish furnished the two gassers, both of which were disappointing in their initial gauge. The Pelican Natural Gas Co.'s No. 2 Chapman, Section 14-16-6, was completed at 2,440 feet making 3,500,000 feet of gas, and the State Line Oil & Gas Co.'s No. 1-A Holdiness, Section 10-16-6, gauged 10,000,000 feet of gas from a total depth of 2,437 feet. The rock pressure on both wells was low, testing less than 500 pounds.

The Leue Oil Co.'s No. 1 Kinder, Section 2-21-7, a few miles northeast of the old Homer Field, was abandoned at 3,500 feet. The operators of this well have shown a tendency not to give out information, so there is nothing definite about the formations encountered in the test. However, the completion depth of 3,500 feet would not indicate that the upper Trinity had been penetrated as this formation is found below the 4,000-foot level in this area.

Two of the border East Texas counties turned in dry holes. Devore & Midfield's No. 1 Cooper, William Ward Survey, Bowie County, was dry and abandoned at 3,008 feet, and in Harrison County, Ben Banner's No. 1 J. C. Lowery, W. D. Stanfield Survey, was found dry at 3,300 feet.

Several wildcats that have aroused interest lately did not materialize into the expected producers during the past week. The Plain Dealing Oil Corp.'s No. 1 Nattin, Section 15-22-14, northwest Bossier Parish, Louisiana, was bailed dry twice during the week, the first time from a total depth of 2,882 feet, and the second bailing was after deepening the hole 8 feet to 2,890 feet. Several barrels of oil of 24.5 gravity was bailed from the well but the absence of gas was a striking feature, only a small volume appearing. Another wildcat in this vicinity, about 7 miles eastward, the Flint River Oil Co.'s No. 1 DeMoss, Section 22-22-13, will drill plug and test sometime during the coming week, 6⅝-inch casing having been set at 3,028 feet. Sand, showing oil, was cored in this well from 3,028-46 feet. In Bienville Parish, the Arcadia Drilling Corp.'s No. 1 Atkins, Section 27-18-6, is temporarily shut down laying a water line. This well seems to be checking somewhat higher than other tests in that vicinity, having topped the Cane River at 600 feet with the base at 900 feet, and is now in the Wilcox formation at 1,165 feet.

Shelby County's Big Well

E. L. Chapman's No. 1 Pickering Lumber Co., C. E. Henry Survey, in the northeastern part of Shelby County, Texas, which blew in as a wild gas well two weeks ago, has been partly killed. Four hundred feet of 12-inch surface casing has collapsed, but before this happened, the operators were able to partially cement several hundred feet of 6-inch casing in the hole through which some gas is escaping. It is also probable that some gas is seeping through crevices on the outside of the 12-inch casing which makes it a difficult situation to handle. It is understood that Chapman and associates will start an offset well to the wild gasser, using the gas to fire the boilers for the second test. Every precaution is being taken to keep the well from catching on fire, guards being maintained to keep traffic and pedestrians moving on the highway only a short distance away.

The Sloan-Tokio Oil Co.'s No. 1 Windham, H. English Survey, another wildcat in Shelby County, which was listed last week as junked and abandoned, is reported to be making periodical heads of oil with enough gas to fire the boilers. It is understood, however, that the well will be abandoned and an offset drilled immediately. Were the original well in good shape, it would in all probability make a small pumper. Other operations in Shelby County follow: Sloan Prospecting Co.'s No. 1 Sanford, M. M. Vann Survey, is drilling in broken lime and shale at 3,400 feet. Schultz and others' No. 1 Hughes, J. Clay Survey, north of the town of Timpson, is drilling in hard lime at 3,100 feet. Henry Maulding is ready to resume drilling from 1,880 feet after changing to a heavier rig on his No. 1 Frost Lumber Co., A. D. Fountain Survey. The Chapparal Oil Co. is arranging to set 6-inch casing for a test on its No. 1 Holt, Matthew Moore Survey. Drilling was resumed on this well recently after having been shut down for six months, and L. C. Curtain and others, pioneer wildcatters in that section, who are making the test, are confident that a producer will result.

Trinity Sand Tests

Several deep tests to the Trinity gas area are fast approaching the pay horizon in Panola County. In the proven field, the Arkansas-Louisiana Pipe Line Co.'s No. 14 Werner, B. C. Jordan Survey, is coring in anhydrite at 4,597 feet. This company completed its No. 13 Werner May 1 as a 25,000,000-foot gasser from 4,727 feet. On the same survey, United Production Co. has set 6⅝-inch casing at 4,638 feet on its No. 10 Werner and is now drilling at 4,686 feet. The Daisy Oil & Gas Co.'s No. 1 Rucks, John Palmer Survey, has resumed drilling after being shut down for several weeks. This well is adjacent to the proven gas area, and E. B. Whitworth, head of the Daisy company, states that the well will be carried to 7,000 feet or more unless oil is found at a lesser depth, as this test is in search of oil, not gas. Mr. Whitworth drilled the first gas well in Panola County and believes that oil should be found in the upper or lower Trinity on that part of the Sabine uplift. The well is now down 4,200 feet. Moses & Wallace have spudded in on their No. 1 Daniels, Isabel Hanks Survey, on what is said to be a Trinity test. The well is being drilled on a 7,000-acre block in the southern part of the county near the Shelby County line. There are five other tests in the southern part of Panola that are actively drilling but none of them have reached the depth to be interesting.

Smackover's Deep Tests

The Lion Oil Refining Co.'s deep test, No. 9-A G. P. Hayes, Section 4-16-15, in the Smackover Field of Union County, Arkansas, continues to be disappointing. The test showed some oil at 4,017-25 feet, but also showed some salt water at this depth, and the hole has been deepened, with constant coring, without result. The last core was from 4,347-51 feet, showing a hard, red, sandy formation. The test, which is being backed by some officials of the Lion Oil Refining Co. at El Dorado and other business men of that city, will be drilled to 5,000 feet or more.

(Continued on Page 76)

LOUISIANA-ARKANSAS PROVEN AREAS

NORTH LOUISIANA

CADDO PARISH—PINE ISLAND

Company, farm and location—	Remarks:
J. T. McCormick's No. 1 C. B. Christian, 330 ft. S, 300 ft. W, NE cor., SW, Sec. 27-21-15	S.D. 1,335 ft.
Shreveport Oil Corp.'s No. 2-B Muslow, 1,000 ft. S, 300 ft. E, NW cor., Sec. 32-21-15	Arranging to set perforated csg. 2,135 ft.
Simplex Oil Co.'s No. 1 Youree-Glassell, 500 ft. N and E, C, Sec. 13-20-15	Set 10-in. 150 ft; S.D.

MOREHOUSE PARISH

Bahan & Bahan's No. 4 Feasel, 900 ft. W, 300 ft. S, NE cor., Sec. 2-20-4	Location.

RICHLAND PARISH

Hope Prod. Co.'s No. 1 McCoy hrs., 660 ft. W, 1,980 ft. S, NE cor. NW, Sec. 29-16-6	Location.
Pelican Nat. Gas Co.'s No. 2 Chapman, 660 ft. N and W, SE cor. SW, Sec. 14-16-6e	Completed July 7; 3,500,000 ft. gas 2,440 ft.
Pelican Nat. Co.'s No. 1 R. H. Alexander, 600 ft. N and W, SE cor., Sec. 4-16-6	Derrick.
State Line O. & G. Co.'s No. 1-A Holdiness, 1,062 ft. E, 760 ft. N, SW cor., Sec. 10-16-6e	Completed July 2; 10,000,000 ft. gas 2,437 ft.
Southern Carbon Co.'s No. 4 Rosengraut & Ducomb, 1,320 ft. S, 660 ft. W, NE cor., Sec. 19-17-6	Set 8-in. 850 ft; drlg. 1,120 ft.
Southern Carbon Co.'s No. 5 Rosengraut & Ducomb, 300 ft. N, 2,089 ft. W, SE cor., Sec. 24-17-5e	Began July 2; set 12-in. 185 ft; drlg. 700 ft.
Southern Carbon Co.'s No. 6 Rosengraut & Ducomb, 2,640 ft. E, 1,980 ft. N, SW cor., Sec. 19-17-6	Rigging up.
United Carbon Co.'s No. 2 Cooper, 660 ft. N, 3,551 ft. E, SW cor., Sec. 13-16-6	Drlg. 2,322 ft.
United Carbon Co.'s No. 1 Faust Lbr. Co., 1,320 ft. S, 1,980 ft. E, NW cor. SW, Sec. 13-17-5	Rigging up.
United Gas Public Service Co.'s No. 5 Marshfield, 660 ft. N and E, SW cor., Sec. 19-17-6e	Rigging up.
United Gas Public Service Co.'s No. 1-A Wayne Land & Timber Co., 1,320 ft. S, 697 ft. E, NW cor., Sec. 24-17-5e	Rigging up.

SABINE PARISH—ZWOLLE

Roy Baker's No. 1 Sabine Lbr. Co., Sec. 1-7-12	Fishing for bailer 2,440 ft.
W. M. Coates' No. 1 Hale, NE cor. SW NE, Sec. 1-7-12	S.D. for wtr. 1,840 ft.
W. M. Coates' No. 1 Williams, NE cor., Sec. 23-7-11	Fishing for D.S. 2,803 ft.
Hawkins et al's No. 1 Moran, Sec. 1-7-11	400 ft. oil in hole 2,620 ft; W.O. S.R.
O. A. Gautier et al's No. 1 Mischell, 330 ft. E, 150 ft. N, SW cor. SE NW, Sec. 30-8-12	Set 6-in. 2,206 ft.
Hawkins & Antoon's No. 1 Newton, Sec. 1-7-11	Testing 2,550 ft.
Hudson & Bird's No. 1 Walden, 480 ft. N, 300 ft. E, SW cor. SW NE, Sec. 26-8-11	Rigging up.
Zeke Lohman's No. 1 McCormick, 660 ft. E, 330 ft. N, SW cor. NE SW, Sec. 2-7-11	Drlg. 1,020 ft.
Loring Oil Co.'s No. 16 Bowman-Hicks, 640 ft. W, 200 ft. S, C, Sec. 3-7-12	Setting 6⅝-in. 2,830 ft.

(Continued on Page 73)

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Rotary operations unless otherwise designated)

NORTH LOUISIANA

BIENVILLE PARISH

Company, farm and location—	Remarks:
Arcadia Drlg. Co.'s No. 1 Atkins, 175 ft. W, 120 ft. N, SE cor. NW NE, Sec. 27-18-6	S.D. 1,165 ft; laying wtr. line.

BOSSIER PARISH

Andrews & Davlin's No. 1 Nattin, 100 ft. N, 250 ft. W, C, Sec. 15-22-14	Bailing good show oil; T.D. 2,882 ft.
Flint River Oil Co.'s No. 1 DeMoss, 200 ft. S and E, NW cor. SE NW, Sec. 22-22-13	Set 6⅝-in. 3,028 ft; W.O.C.
Dr. W. N. Hankin's No. 1 Newell, 300 ft. S and W, NE cor., Sec. 12-19-11	S.D. 1,185 ft.
D. L. Perkins' No. 1 Ardis & Co., 1,127 ft. N, 198 ft. E, SW cor., Sec. 13-15-11	Set 10-in. 90 ft; S.D.
Rombaugh et al's No. 1 Allison, SW SE, Sec. 10-19-13	S.D. 1,600 ft.

CADDO PARISH

United Gas Public Service Co.'s No. 1 M. K. Smith, 660 ft. S, 2,640 ft. W, NE cor., Sec. 33-23-16	Drlg. lime 4,977 ft.

CALDWELL PARISH

Carter Bell's No. 1 Taylor, 150 ft. S, 150 ft. E, NW cor. NE SE, Sec. 17-14-4	Derrick.
Hudson et al's No. 1 Burton, Sec. 35-12-2e	S.D. 2,950 ft.

CATAHOULA PARISH

National Drlg. Co.'s No. 1 Marsh McMiller, 70 ft. N, 100 ft. W, C, Sec. 26-9-6	T.A. 3,097 ft.

CLAIBORNE PARISH

Leue Oil Co.'s No. 1 Kinder, 154 ft. N, 642 ft. E, SW cor. SE, Sec. 2-21-7	Dry and abd. 3,500 ft.

DE SOTO PARISH

Keatchie O. & G. Co.'s No. 1 Hallie Smith (was H. E. Weichert's), NE SE, Sec. 31-14-15	S.D. 2,350 ft.
S. S. Meek, tr.'s No. 1 Wagner, 300 ft. S and E, NW cor. SE NW, Sec. 5-12-14	Derrick.
Ben Merritt, tr.'s No. 1 Wallums, NE cor. SW SW, Sec. 29-12-12	Set 6-in. csg. 2,580 ft.; T.D. 2,657 ft.
E. T Oakes' No. 1 R. H. Bryant et al, 200 ft. N and W, SE cor. NE NW, Sec. 30-13-15	S.D. 1,997 ft.
Rellitt Oil Co.'s No. 1 Gannon hrs., 300 ft. S and E, NW cor. NW NE, Sec. 12-11-16	S.D. 1,410 ft.
Walters-Nicholson, tr.'s No. 1 Jim Guy, Sec. 3-11-13	S.D. fuel 700 ft.

NATCHITOCHES PARISH

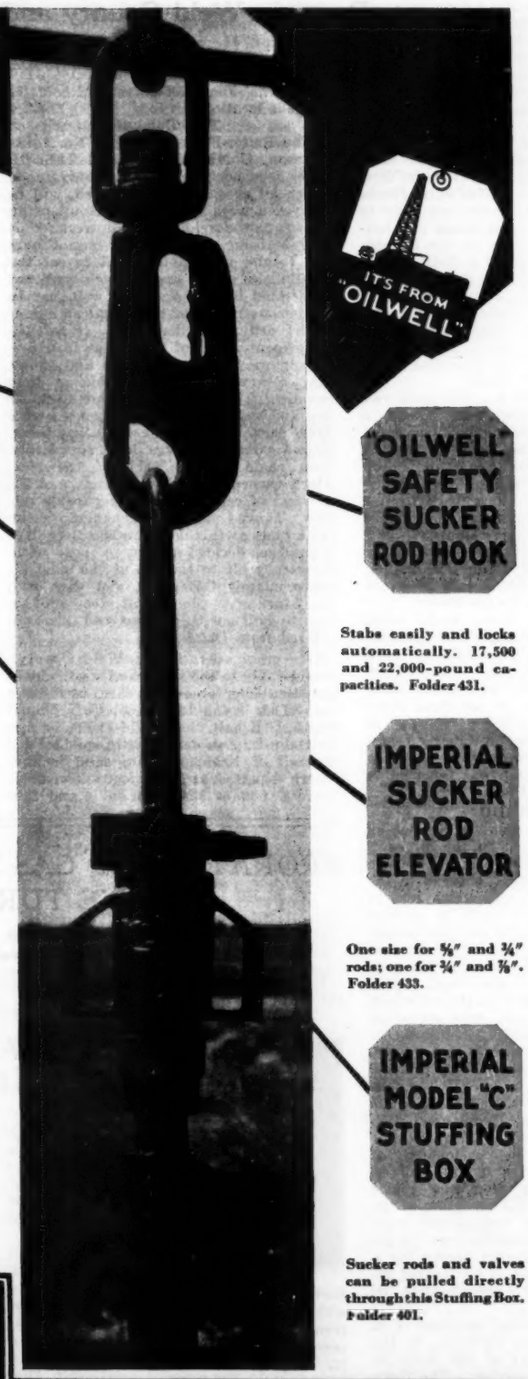
W. M. Coats' No. 1 Collins, 730 ft. N, 50 ft. E, C, Sec. 23-9-10	T.A. 4,091 ft.
J. W. Cooper et al's No. 1 Cooper, NW SW, Sec. 35-11-10	S.D. 2,156 ft.
Cooper et al's No. 2-A Cooper, C SE SE, Sec. 32-11-10	S.D. 1,513 ft.
C. M. Talley et al's No. 1 C. M. Talley, 1,980 ft. W, 660 ft. S, NE cor. SE, Sec. 29-11-10	Tested dry; S.D. 1,380 ft.

RED RIVER PARISH

La. Oil Dev. Co.'s No. 2 La. Delta Pecan Co., 2,950 ft. S, 300 ft. E, NW cor., Sec. 27-12-11	Spudded in; S.D. 50 ft.
Mack Jourdon Co.'s No. 1 Lockett, 4,035 ft. S, 1,080 ft. E, NW cor. SW, Sec. 29, in Sec. 32-13-10	Fishing for drill bit 2,000 ft.

(Continued on Page 72)

SAVE 3 WAYS



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Come to "OILWELL"

Northeastern Colorado Has New Tests

Continental Oil Co. Makes Two Locations on Greasewood Dome in Weld County and Is Surveying for Pipe Line

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., July 13.—Allowable outlet of the Hobbs Pool was cut from 37,021 bbls. for the last half of June to 37,070 bbls. daily for the first half of July. Hobbs crude was cut to 10 cents per barrel by the Humble Oil & Refining Co. and there is speculation as to the effect on negotiations pending for the extension of the proration agreement.

The Continental Oil Co. has made two locations on the Greasewood Dome in Weld County, Colorado, and is surveying a pipe line from the field to Denver. The Reiter-Foster Oil Co.'s No. 1 Ida Johnson lost its circulation while pouring cement and will have to drill out 5,600 feet. Two small gas wells were completed in Montezuma County.

Two tests to the Madison lime on the Garland Dome in Wyoming are drilling near the objective. Three new locations were reported in the Osage Field.

The first of the seven wells being drilled in the Cut Bank Field in Montana by the Montana Power Co. to reach the pay had an open flow of 37,000,000 feet a day. A second well had a show of oil with the gas in the first sand. Two new operations were reported in the Bear's Den district in Liberty County and that field is apparently in for a play. One new location was reported in the Kevin-Sunburst Field.

COLORADO

Northeastern Colorado is developing rapidly into a hot spot in the oil news and the area undoubtedly is on the eve of considerable activity. A break in the policy of the major companies not to drill at this time if it could be avoided occurred this week when the Continental Oil Co. made two locations on the Greasewood Dome in Weld County. Its purpose is to develop an additional supply of crude for its refinery at Denver which was completed and put into operation last December. Offsetting requirements on one of its leases also was a factor. The Continental is now buying the 350 bbls. daily output from the Platte Valley Petroleum Co.'s No. 1 Patterson, the discovery well, but the Reiter-Foster Oil Co. made a deal with the Platte Valley company for the joint development of its acreage which gives it first call on the crude production from the Platte Valley holdings with the exception of the discovery well. The Continental company now has an engineering crew in the field making a preliminary survey for a pipe line from the field to its Denver refinery, a distance of approximately 70 miles.

One of the Continental locations is in the C SE SW, Section 13-6n-61, on the Frank N. Briggs tract of 320 acres in the west half of the section. The forty upon which the well has been spotted offsets on the north the forty upon which the Reiter-Foster Oil Co. is now drilling its No. 1 Ida Johnson. The Platte Valley company holds the tract offsetting this location on the east. The Continental company is moving in a rotary rig from the Oregon Basin Field.

The other Continental location is in the C SE SW, Section 24-6n-61, the same section upon which the discovery well is located, on the Mrs. G. C. Gadbois tract. The well has been spotted half a mile due south of the discovery. The policy of making locations in the center of forties is being adopted. The Ohio Oil Co. holds the offset acreage on the east and south and the Reiter-Foster Oil Co. has the tract on the north of the Gadbois location.

Test Delayed

The Reiter-Foster Oil Co.'s No. 1 Ida Johnson, C NE NW, Section 24-6n-61, 1,000 feet north of the discovery, upon which all eyes are now centered, will be delayed a week or two as a result of an unfortunate development this week. This well is being watched closely not only due to the fact that it will reveal the possibilities of the sands which were not penetrated by the discovery well, but to its demonstration of the practicability of rotary drilling in that area. It reached its present depth of 6,220 feet in a few days more than two months and shows that rotary tools are feasible in that country. The 9⅝-inch was run to 6,220 feet and was to have been cemented with 2,000 bags. While the cement was being poured circulation was lost, supposedly from shale cavings back of the pipe which caused the hole to bridge, and 5,600 feet of cement is standing inside the pipe. It was planned to change over to cable tools at this depth to complete, but it has been decided now to go ahead with the rotary bit to the top of the sand at approximately 6,700 feet and then run the 7-inch. A 4-inch drill stem will be used to drill out the cement and this was ordered from Oklahoma.

One other operation in Weld County, considerably to the south and west, which has been idle for three years, is resuming. This is the Retter Oil Co.'s No. 1 Smith, C E half, Section 14-1n-66, in the Brighton-Lupton district. It spudded in the fall of 1924 to test a sand in the Pierre expected at 1,700 feet. The hole has 800 feet of 12½-inch in it and the total depth is 1,171 feet. It had a show of oil at 800 feet and at its present depth it is 70 feet into a sand that showed a little oil and water from above. George E. Retter, better known as "Dad" Retter, a veteran oil man who perhaps has traveled on foot over more of eastern Colorado than any other man studying the geology of the country, promoted this operation and has stayed with it through all kinds of vicissitudes. He was responsible for the discovery of gas in Yuma County a number of years ago. F. E. McCain, who was employed by him in the Yuma operation, is in charge. The 12½-inch at the top will be replaced and underreamed to the top of the sand at 1,100 feet. If this sand does not prove to be of any value, the hole will be continued to the sand expected at 1,700 feet.

Morgan County

Another development which will contribute towards an active drilling campaign in northeastern Colorado took place this week when the Colorado Associated Oil Co. was incorporated under the laws of Colorado with an authorized capital of $1,000,000. Announcement was made two weeks ago that William A. Myers and associates had acquired a block of 17,000 acres on the North Fort Morgan Dome to the northwest of the town of Fort Morgan, and were preparing to put down a test. The Colorado Associated company was formed to develop this block. Mr. Myers is president.

The block of 17,000 acres lies to the northwest of Fort Morgan the nearest acreage being 3½ miles away. The Midwest Refining Co. contributed 1,000 acres to the block, the Morgan-Midwest Oil Co. about 2,000 acres and Mr. Myers supplied the remainder. The geology is by the Midwest Refining Co. geological staff. The structure has a closure of 70 feet and is 70 feet higher than the Greasewood Dome to the northwest.

The Indian Territory Illuminating Oil Co.'s No. 1 State, C NE NE, Section 16-1n-57, Fort Morgan anticline, has not yet made any new hole below 4,090 feet where it changed to rotary, cleaned out below the 8¼-inch at 3,650 feet and cemented, but is expected to make fast time from now on.

Lincoln County

Eastern Colorado Oil Co.'s No. 1 State, SE cor. NW, Section 36-14s-57, Hugo district, is bottomed at 3,380 feet and has made no new hole since taken over by the present operators. The 4¾-inch was pulled a second time to replace a casing shoe and has been rerun to within 20 feet of bottom and is underreaming. It has a good show of oil at the bottom, possibly coming from the shale. It is estimated to be only a few hundred feet off the Dakota.

Adams County

Nettie M. Slatt's No. 1 Hills, SE cor., Section 27-3s-64, Watkins district, is drilling at 3,670 feet after a shutdown to splice the cable. It is carrying 2,400 feet of water in the hole to maintain circulation for the 8⅝-inch which is to be landed at 4,000 feet. It is showing a little gas through the water.

Arapahoe County

MacDeb Drilling Co.'s No. 1 Fitzsimmons, NE, Section 7-4s-66, near Aurora, is running 4¾-inch at a total depth of 5,835 feet in the top of an unidentified sand showing a little oil.

Jefferson County

Ruby Hill Oil & Gas Co.'s No. 1 Braden, SE cor., Section 24-4s-69, near Denver, is shut down at 3,920 feet.

Larimer County

Raddatz Corp.'s No. 2 State, near the center NW, Section 16-4n-69, Berthoud Dome, is drilling below 450 feet. This is a joint operation with Standard Oil Co. of Colorado and is only a short distance from a well drilled several years ago by the Midwest Refining Co. to a total depth of 4,031 feet. This well had good shows of oil and gas in upper horizons and water in the Lakota.

Park County

South Park Oil Co.'s No. 1 Milligan, NE cor. SE, Section 13-8s-76, Jefferson district, is bottomed at 2,065 feet and running 6⅝-inch to carry. South Park Oil & Gas Co.'s No. 1 Esche, SE cor. NW, Section 5-9s-76, Muleshoe structure, is bottomed at 2,370 feet and hauling in 8¼-inch.

Rio Blanco County

The California Co.'s No. 1 California-Raven, NW SE, Section 30-2n-102, Rangely Dome, is drilling at 815 feet, and Magnolia Petroleum Co.'s No. 1 Maddock, C NW SE, Section 9-2s-96, Piceance Creek, is drilling below 510 feet.

Montezuma County

Fred C. Haller's No. 1 Stephens, Section 33-36-14w, Point Lookout Dome, was completed as a 75,000-foot gas well in the Dakota at 745 feet. Same operator's No. 2 Stephens, SE, Section 28-36-14, was a gas well in the Dakota, but will be carried on down to test the Sundance.

La Plata County

Murchison Oil Co.'s No. 1 Doescher, SW cor. NW, Section 29-33-13w, Dry Mesa, is drilling with rotary at 1,400 feet.

NEW MEXICO

Another reduction in Lea County crude took place on July 7 when the Humble Oil & Refining Co. posted a price of 10 cents per barrel for oil from the Hobbs, Lea, Eunice and Jal Fields in line with its reductions in Texas.

PRORATION OF GAS FLOWS STARTED IN THE TURNER VALLEY FIELD

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, July 11.—Proration of gas flows has been made effective in the Turner Valley Field, but it is a little early to state definitely the probable effect on the crude naphtha recovery. The permissible gas flow is restricted to 40 per cent of the maximum open flow.

On the basis of early figures from the producing wells in the Mercury-Miracle group in Section 4-19-2w5, it is claimed prorating will reduce the crude naphtha recovery from the field by approximately 10 per cent. Of the Mercury group, Mercury's No. 1 producer was most seriously affected; this well had a potential production close to 600 bbls., has been averaging between 400 and 500 bbls., and is stated to have made 378 bbls. under the restricted flow. The smaller wells in this group apparently were less affected.

The general belief among operators has been that the restricted flow would put some of the smaller wells out of production and that a number of wells would, owing to mechanical defects, be unable to comply with the new regulations.

Central Turner Valley

In the Central Turner Valley area, Dome Oils' No. 2, LSD 16, Section 36-19-3w5, struck a flow of gas 180 feet in the lime at around 5,345 feet. The flow, estimated 6,000,000 feet, caught fire, destroying the derrick. New derrick is being erected, and meanwhile the flow has been placed on the separator to test crude naphtha recovery. Commercial production in this location, south of the Okalta wells, will materially extend the proven area of the central field.

Okalta Oils' No. 1, LSD 1, Section 1-20-3w5, is reported making production test of a lower porous sand after deepening in the lime. Production of 50 to 60 bbls. was taken from the upper horizon while deepening, and an additional gas flow was encountered in the lower sand. The initial production from the upper horizon several years ago was around 400 bbls.

British Dominion Oil & Development Corp.'s No. 2, LSD 6, Section 12-20-3w5, is reported deepening in the lime below 5,388 feet and preparing to test production. Shots will be tried at several horizons in the lime. The well had initial production of about 100 bbls. from the upper lime, but later declined materially.

In South Turner Valley, Lowery Petroleum's No. 2, NW, Section 17-19-2w5, is at 6,584 feet and reported making a bailing test of an oil show at 5,600 feet.

North Turner Valley

In the North Turner Valley, United Oils' No. 4, LSD 2, Section 24-20-3w5, is reported cementing in the top of the lime around 5,700 feet, corrected depth. Earlier reports indicated the test was considerably deeper than this.

Shareholders of Model Oils, Ltd., held their annual meeting recently at Calgary when the following officers were re-elected: President, W. R. McArthur:

(Continued on Page 75)

Just what effect this action will have on proration in the Hobbs Pool is not certain at this time. Last month the 23 operators reached an agreement with state officials for an extension of proration for another six months from July 10 and this action, it is stated, was approved by James Hinkle, commissioner of the New Mexico land office and Dr. E. H. Wells, state geologist. It will be recalled that when the commissioner of the land office and the state geologist signed for New Mexico last January Gov. Arthur Seligman took issue with them as to the proper authorities to bind the agreement in behalf of the State. A somewhat similar condition is reported at this time and the matter of the extension of the agreement is now in negotiation. Some of the operators were quoted at the meeting in Dallas in May as being in favor of shutting in the field entirely and others favored an outlet of 100 bbls. daily per unit, but neither proposal prevailed. Objections were raised that the State would not consent to that plan and that, furthermore, there was a risk of invalidating leases if the wells were closed down entirely. Doctor Wells was quoted as saying it was possible that if wells were opened up one day each month such course might comply with lease requirements. An early determination of the issues is anticipated.

The Hobbs Pool executive committee placed the potential production of the field at 1,156,834 bbls. as of July 1 from 144 wells on 127 units. This is practically the same as the potential established for the last half of June with no change in the number of wells or units in production. The allowable outlet for the first half of July was, however, cut to 35,070 bbls. daily as against 37,021 bbls. daily for the last half of June.

Lea County

Only two wells in Lea County were reported as having made any progress the past week. Culberson & Conrad's No. 1 State, C NE, Section 22-18-34, Caprock area, is drilling at 3,125 feet in anhydrite, the last salt being at 3,060 feet, and the Western Drilling Co.'s No. 1 State, SE NE NE, Section 16-20-32, northwest of the Lea Pool, is drilling at 3,040 feet in lime with 2,400 feet of sulphur water in the hole. The first water was at 2,745 feet and there was an increase at 2,785-2,800 feet.

Otero County

Pasotero Petroleum Corp.'s No. 1 Evans, NW cor. SW, Section 22-24-12, 61 miles northeast of El Paso, is drilling at 1,100 feet in alternating shales and hard limestone of the Pennsylvanian formation. It had one of the best shows of gas so far encountered at 1,086 feet. The shows of gas have persisted for the last 200 feet. It is estimated to be 150 to 250 feet above the break in the lime.

De Baca County

Matador Oil Co.'s No. 1 Woods, NE SW SW, Section 6-4n-20, Salada Creek, is bottomed at 3,200 feet in granite wash and waiting for cement to set. The 6⅝-inch was cemented at 3,180 feet to shut off water. Just below this depth it was reported to have had a show of oil. The Landowners Oil Co. has been formed by citizens of Fort Sumner and surrounding territory to take over the McAdoo well in the SW cor. NE, Section 16-1s-27, Buffalo Creek, including 18,000 acres in the block. This well, which has been standing for some time at 4,508 feet, will be carried deeper. Mr. McAdoo was resuming operations when the deal was made. O. B. Erickson, of Fort Sumner, is president of the new company and J. P. Brooks, former sheriff of De Baca County, is secretary. The rig is being overhauled and 6¼-inch will be run and carried probably to 5,000 feet.

San Miguel County

Starr Oil Co., Ltd.'s No. 3 Adams, NE cor.. Section 25-17-17, Dunken district, is drilling below 4,540 feet.

Guadalupe County

The New Mexico Producing & Refining Co., Ltd.'s No. 1 McMullen, SW cor., Section 24-5n-16, Mesa Leon district, is bottomed at 1,010 feet in red sand and shale and straightening crooked hole at 486 feet.

Valencia County

Thomas B. Harlan and others' No. 4 Harlan Ranch, NW NE NW, Section 5-6n-2e, De Chavez district, is drilling at 3,700 feet.

San Juan County

The Continental Oil Co.'s No. 24, SW NW SW, Section 1-29-19, Rattlesnake Dome, is drilling by at 4,418 feet. Old bottom is at 4,730 feet. Reserve Oil Co.'s No. 3, NW SE SE, Section 36-22-14w, Stoney Butte, has underreamed 6⅝-inch to 775 feet and will carry it to 810 or 820 feet before cementing and drilling into the second sand. Kutz Canon Oil & Gas Co.'s No. 1 Day, SW cor., Section 20-28-10, Kutz Canon district, is drilling below 3,175 feet after recovering tools. It is drilling in the Lewis shale.

WYOMING

Natrona County

The Midwest Refining Co.'s No. 11 Middy, C NE NE, Section 23-35-79, Midway Dome, cemented back to 5,962 feet and was drilling out to test the Muddy sand when the tools stuck and fishing is in progress.

Park County

Midwest Refining Co.'s No. 24 Rosenberg, NE SE NE, Section 26-58-98, Frannie Dome, is drilling below 1,500 feet. It was in a hard water sand at 1,460 feet.

Big Horn County

Utah Southern Oil Co.'s No. 3 Government, NE cor. SW, Section 29-56-97, Garland Dome, is drilling in the Madison lime at 4,010 feet. Core has been showing saturation from 3,924 feet to bottom. Only one well has so far been completed in the Madison on this dome, Ohio Oil Co.'s No. 1 Easton, SE cor., Section 33-56-97, which at a total depth of 4,442 feet indicated it was better than a 5,000-bbl. well.

The Portland Association, Inc.'s No. 1, SE NE SE, Section 29-56-97, cemented pipe at 3,893 feet. This is a rotary operation to the Madison with F. T. Griffith, trustee, in charge and Paul Stock doing the drilling.

Ohio Oil Co.'s No. 1 Smith, NE SE SE, Section 33-56-97, which last week was reported a completion as a 20,000,000-foot gasser at 1,707-28 feet, is being deepened from the Torchlight to the Peay sand and is drilling at 1,901 feet.

Washakie County

Ohio Oil Co.'s No. 1 Strothers, SW SE NW, Section 19-45-92, Neiber Dome, cemented the 9⅝-inch at 6,144 feet and is waiting. It is drawing close to where the Frontier is expected. This hole will be carried to 7,500 feet, if necessary.

Converse County

Continental Oil Co.'s No. 50 Whiteside, NW SW SW, Section 9-33-76, Big Muddy, which is being deepened from the Frontier at 3,207 feet to the Lakota, is drilling at 3,967 feet.

Niobrara County

Continental Oil Co.'s No. 2 Rohlff, NW cor., Section 2-35-65, Lance Creek, will not be deepened to the Sundance at this time as planned. Instead, its No. 3 Rohlff, SE SW SW, Section 32-36-65, is drilling at 3,000 feet with cable tools, and is being deepened from 2,915 feet to 3,200 feet to increase gas production. It will not be drilled to the Sundance at this time.

Indian Petroleum Co.'s No. 1, NE NW NE, Section 7-35-65, is drilling up iron at 3,953 feet. Total depth is 3,970 feet. The Sundance at 4,200 feet is the objective.

Weston County

Three new operations were reported in the Osage Field this week as follows: Yellowstone Petroleum Co.'s No. 1, NE cor. NW, Section 23-46-64, has rig on location, and Hugh Updike's No. 2, CNL SE NW, Section 23-46-64, is drilling at 500 feet. Wytex Oil Co.'s No. 6 Logan McCullough, CWL SW NE, Section 23-46-64, is drilling at 1,200 feet. There were no completions. Drilling wells include the following: Leuthart and others' No. 5, NE NW SE, Section 13-46-64, drilling at 1,200 feet. Yellowstone Petroleum Co.'s No. 1 Lundberg, NE NW NW, Section 27-46-64, is spudding, and Chadron-Osage Oil Co.'s No. 13, NE cor. SW, Section 14-46-64, is bottomed at 1,300 feet and waiting for cement to set. Lambie Oil Co.'s No. 7 Bock, SE cor. NW, Section 14-46-64, is waiting for cement to set. Bradley-Manuel's No. 10, CEL SE NW, Section 20-46-64, for which rig was up a year ago, has begun spudding. Julius Peters and others' No. 1 Witzell, SE cor. NW, Section 30-46-64, Fiddler Creek, is cementing cave in old hole at a total depth of 1,600 feet. This operation was taken over recently by the new interests. The structure is a small anticline of low dips on the northeast flank of the Powder River Basin. It is planned to test the Newcastle (Muddy) sand, the producing horizon in the Osage Field, and if it is not productive to go on down to the Dakota and Lakota to a total depth of 4,200 feet.

Laramie County

Prairie Oil & Gas Co.'s No. 1 Warren, SE NE SE, Section 22-13-68, southwest of Cheyenne, is drilling at 360 feet in shale.

Carbon County

Midwest Refining Co.'s No. 27 Union Pacific, NW SE SE, Section 11-20-81, Elk Mountain, a Dokta test to approximately 3,500 feet, is drilling at 2,945 feet in gray sandy shale. Producers & Refiners Corp.'s No. 1, SW cor., Section 19-20-83, Overland Dome, is coring in sand at 1,000 feet.

Fremont County

Kinney-Coastal Oil Co.'s No. 1 Heslin, C NW NE, Section 22-3n-1w, Pilot Butte, three-fourths of a mile northeast of No. 1 Dykeman, its big gasser, is moving in combination rotary and standard outfit with a 122-foot derrick.

Producers & Refiners' No. 10, SE NW SW, Section 14-32-95, Big Sand Draw, which tested all horizons down to and including the Sundance at a total depth of 5,345 feet, has plugged back to 5,100 feet after cementing 8¼-inch at 5,169 feet and is breaking down rotary tools. It is to be completed as a gas well in the upper formations. Same company's No. 2, NW SE NW, Section 33-34-92, Muskrat Dome, is bottomed at 5,824 feet in blue shale and is reaming at 5,810 feet.

Sweetwater County

Mountain Fuel Supply Co.'s No. 1 Tucker, C NW SE, Section 18-13-99, Alkali Butte Dome, is bottomed at 3,630 feet and cleaning out to resume after being shut down for the winter. It is believed to be close to a big gas sand.

MONTANA

Glacier County

L. B. O'Neil, trustee's No. 1 State, C NW NW, Section 33-36n-5w, in the Cut Bank Field, which was reported last week as having come in with a flow of 20,000,000 feet of gas per day, estimated, proved to have an open flow capacity of 37,000,000 feet of gas per day with a pressure of 685 pounds to the square inch, according to the most reliable figures available. This is much greater than was expected. O'Neil is trustee for the Montana Power Co. which began construction recently on a 20-inch 200-mile pipe line from the field to Anaconda and Butte at a cost of $12,000,000. The opinion is expressed in some quarters that in the event the Cut Bank supply is not sufficient the company has plans to go north, a distance of 60 to 70 miles, and connect with the line from the Turner Valley Field in Canada at Lethridge. No. 1 State, which is somewhat of a surprise as to volume of gas, is only half a mile southwest of No. 1 Michaels, the discovery well, which came in last year for 15,000,000 feet. The opinion generally held among geologists familiar with the area is that while Cut Bank is a large structure, that the sands are lenticular and that the field will be spotted. Also, the chances are about equal for it being either an oil or a gas field, it being expected that some wells will produce oil and others gas in volume dependent upon the thickness of the sands at the locations drilled. Six other wells are now drilling by the same interests. These are as follows:

No. 1 Taylor & Spikes, C SW SW, Section 35-36-5w, 2 miles to the southeast of the gasser just completed, had between 2,000,000 and 5,000,000 feet of gas in the Sunburst sand at around 2,700 feet, accompanied by about 10 bbls. of oil per day, the oil flowing by heads. The gas and oil were cased off with the 6¼-inch to continue to the Ellis-Madison contact. No. 1 Berger, C SE NE, Section 2-35-5w, is drilling at 1,500 feet, and No. 1 Hughes, C NW SE, Section 3-35-5w, is drilling at 1,000 feet. No. 1 Schneider, C NE SE, Section 32-36-5w, is drilling at 2,100 feet after cementing 10-inch at 1,900 feet. No. 1 State, C SE NW, Section 34-36-5w, is drilling at 2,600 feet, and No. 1 State, C SW SW, Section 36-36-5w, is drilling at 1,950 feet.

Montana Utilities Co.'s No. 1 Hogland, NW cor. SW, Section 13-34-6w, is idle after moving tools to location.

Fulton Petroleum Co.'s No. 1 Blackfeet, SW NE NE, Section 28-36-12w, Milk River structure, is drilling at 2,360 feet.

Carbon County

Ohio Oil Co.'s No. 1 Montana Industrial, SE SW NE, Section 11-7s-21, Dry Creek, an offset on the north to the discovery well in the Lakota, is bottomed at 5,581 feet. The 9⅝-inch was cemented at 5,322 feet and the plug has been drilled out. Mud is now being bailed down for a test. It had a show of oil and gas in the top of the Lakota. Same company's No. 1 Souders, C SW SE,

(Continued on Page 102)

UNIVERSITY OF TEXAS REGENTS ASK CLOSING OF REAGAN COUNTY WELLS

AUSTIN, Tex., July 13.—Action of University of Texas regents in causing four Reagan County wells to be closed down, shutting off 20,000 bbls. daily production, and their "request" for the companies to shut down five more producing 20,000 bbls. a day, along with the request for the attorney general's aid in making the request effective, was announced in the following resolution adopted at Austin Saturday:

Whereas, the board of regents of the University of Texas, now in regular session, after due consideration and deliberation has reached the conclusion that immediate action should be taken to prevent further waste of the natural resources on the University of Texas lands in West Texas, especially the tremendous and inexcusable waste of gas in Reagan County; and

Whereas, the nine deep wells in said county on University lands, when permitted to flow, produce in each 24 hours approximately 40,000 bbls. of oil and over 300,000,000 feet of gas; and, although the board of regents through its land committee, with the co-operation of the attorney general and the board for lease of University lands, has prevailed upon the oil and gas lessees of said lands to discontinue the production from four wells, the other five wells still produce approximately 20,000 bbls. of oil per day, which results in the waste of over 110,000,000 feet of gas per day by its being blown into the air or burned.

Now, therefore, be it resolved by the board of regents of the University of Texas, in regular session, that the lessees aforesaid be requested to close down all wells on University lands and produce no oil therefrom until they shall develop a market for the gas necessarily used in producing the oil, and that they forthwith discontinue turning any of said gas loose into the atmosphere or destroying same by fire; and that the attorney general of Texas be requested to co-operate with the board of regents of the University in the effort to keep the said oil and gas in their natural reservoir until the gas can be used in the interest of the people of this State and the oil sold at a proper price.

Be it further resolved, that the board of regents does hereby request the legislature now about to convene in special session to pass necessary laws to conserve the natural resources on University lands, and especially to conserve the gas on said lands and to prevent by suitable legislation the wastage and burning thereof.

May Peg Kettleman at 60,000 Barrels

Tentative Approval by Operators of Plan to Curtail Field Until Next January. Field Potentials Revised

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., July 11.—The most important development in California during the week was the tentative approval of a plan by operators in the Kettleman Hills Field to limit the production of that district to the daily allotment of 60,000 bbls. in conformity with the curtailment program which became operative June 1, 1931. Daily production at Kettleman Hills has been unusually erratic for several weeks due to the completion of new wells and subsequent curtailment. Peak production of this field up to the present was 88,328 bbls., produced on July 3. Current production approximates 63,400 bbls., but the completion of four wells within the next few weeks may cause another temporary upswing. The field's potential at present is conservatively estimated at 170,000 bbls. per day and this is expected to be substantially increased by pending completions.

In conformity with the new plan ratified this week, operators are obligated to keep production within 60,000 bbls. per day until January 1, 1932, provided that curtailment in other fields continues and is equally effective. In other words, if the general curtailment program should break down, Kettleman Hills' operators will not be morally bound to continue to respect the existing gentlemen's agreement. The plan adopted by Kettleman Hills' operators to keep production down to 60,000 bbls. is based on the potential production given each operator by Umpire Grimm.

Potential 170,000 Bbls.

Potential production of the North Dome was boosted to 170,000 bbls. per day early this week when the Shell's No. 1 Dixon and No. 23-1 P of the Kettleman North Dome Association were brought in flowing 6,510 bbls. and 6,360 bbls., respectively. The former well was bottomed at 8,807 feet and finished with a 6⅝-inch oil string, carrying 1,075 feet of perforated, while the latter was drilled to 8,338 feet and finished with a 7-inch oil string. No. 1 Dixon of the Shell, the deepest well drilled in the North Dome so far as footage is concerned, is located farther out on the north flank than any other well completed up to the present and extends the northern limits of production. The brown shale showed a substantial thickening in this immediate area and consequently required deeper drilling. The Shell is naturally quite elated by the showing of this well, especially because the oil is relatively clean. The Union has been watching the outcome on this well because of its possible effect on the Cheney lease located approximately 3,000 feet farther out on the north flank. It is probable the Union will hold up development work on the Cheney lease pending the outcome of two wells now being drilled by the North American Consolidated in the same section.

While commenting on extension work, it might not be amiss to call attention to the Kettleman North Dome Association's No. 58-20 J. The significance of this well lies in the fact that it is the first project started by the North Dome Association outside of the red line which theoretically encircles possible productive acreage in the North Dome. This well, which is in Section 20-21-17, is the most westerly well to be started in the North Dome. It is well within the blue line but will increase the association's amount of productive acreage if commercial production is secured. It is also interesting from a wildcat standpoint as it is not very far from a shallow well drilled years ago by Tom Crum. The Union Oil Co. has beaned back No. 1 King from 20,075 bbls. per day, its initial production, to 4,175 bbls. and will probably keep it curtailed around this figure for an indefinite period. Additional gas traps will be erected in the near future, and the well permitted to establish a maximum potential. In lieu of this, the company may waive the usual five-day flow test and accept an arbitrary potential in the interests of conservation as a five-day flow test would cause field production to greatly exceed the allotment of 60,000 bbls. per day.

May Deepen Discovery

The Kettleman North Dome Association succeeded in killing the Milham Exploration Co.'s discovery well early in the week and this project, which some engineers claim presented an unusual hazard, is being cleaned out preparatory to being deepened to the Ochsner zone if possible. Fred Stone, who had personal charge of work on the well, reported no difficulty in bringing it under control. Three other wells were finished in the Elliott gas zone subsequent to completion of the Milham's discovery. The Standard has already killed one of its offsets and will follow a similar procedure with the other at an early date. The Continental Oil Co.'s No. 1 Elliott, the fourth of the four wells drilled in this immediate area, will be killed by the Kettleman North Dome Association after the conclusion of work on the Milham's discovery well.

Seventeen Producing Wells

There are 17 wells producing in the North Dome, in addition to 5 which have either been shut in or killed preparatory to being deepened. The Kettleman North Dome Association has six wells producing, the Standard, four; Superior, two; Union, one; Associated, one; Petroleum Securities, two, and Shell Oil Co., one. Based on production figures early this week, the association's No. 41-2 P was flowing 3,275 bbls.; No. 1-12 P, 1,630 bbls.; No. 8-28 J, 10,315 bbls.; No. 27-34 J, 5,715 bbls.; No. 2-1 P, 4,350 bbls., and No. 23-1 P, 6,360 bbls. The Standard's No. 85-29 J is flowing 9,825 bbls.; No. 47-35 J, 8,015 bbls.; No. 8-1 P, 1,820 bbls., and No. 81-11 P, 1,675 bbls. No. 21-33 J, No. 32-3 P and No. 21-7 Q are entirely shut in because of curtailment. Nos. 1 and 2 on the Huffman property of the Superior were flowing 10,400 bbls. and 1,025 bbls. per day, respectively. The Associated's No. 1 Whepley is flowing 1,550 bbls., while Nos. 1 and 2 on the Felix property of the Petroleum Securities are flowing 4,100 bbls. and 3,650 bbls. per day, respectively. Several additional wells are expected to be finished in the Kettleman Hills Field within two or three weeks. These are the Associated's No. 2 Whepley, North American's No. 1 Bleauvelt, Standard Oil Co.'s No. 34-29 J and the Kettleman North Dome Association's No. 8-6 Q. Petroleum Securities' No. 1 Burbank, a deep test being drilled in the Middle Dome of Kettleman Hills, was still in the brown shale at 7,301 feet and operators holding acreage on this structure have become a little anxious over the outcome. Correlation work indicates the probability that the Temblor oil sand should be encountered in this well somewhere around 7,400 feet.

Revision of Potentials

The Operators General Committee on State-wide Curtailment readjusted the potential and allowable production in a number of fields on July 1. Belridge, due to completion of an 8,000-bbl. well by Reward Oil Co. a few weeks ago and additional impending completions, was given a new potential of 25,025 bbls., compared with a previous daily potential of 8,900 bbls. The potential daily production of the Elwood Field was reduced from 86,500 bbls. to 78,000 bbls., while Santa Fe Springs was reduced from 126,600 bbls. to 123,550 bbls. The daily potential at Ventura Avenue was increased from 96,145 bbls. to 98,855 bbls., and Potrero was raised from 1,150 bbls. to 2,350 bbls. The completion of several substantial producing wells in these areas was responsible for the increased production allotted to each. The readjustment in the potential and allotted production made effective July 1 did not change the State's allotment as this is a pegged figure ratified at the curtailment meeting late in May. The potential daily production of Kettleman Hills was increased from 82,200 bbls. to 153,000 bbls. and a further upward revision will be necessary on August 1 due to subsequent completions. The potential of this field will not have any effect on the district's allotment as this figure is pegged at 60,000 bbls. per day until January 1, 1932.

Crude oil production in California, reflecting completions at Kettleman Hills and subsequent adjustments to meet curtailment, showed several violent fluctuations during the week. The refined oil market likewise showed erratic tendencies with the result that conditions are decidedly unsettled. Price cutting in the retail market by independent refiners and bootleggers and the reinstatement of competitive price tags by major refiners resulted in gasoline being sold all the way from 11 cents per gallon to 16 cents per gallon tax paid in southern California territory. Considerable progress was made during the week in the movement to consolidate operations of independent refiners in an effort to stabilize conditions and the possibility of success seems fairly good.

Difficulty in Curtailment

Considerable difficulty has been experienced by Umpires Grimm and Anderson in effecting curtailment in a number of instances at Long Beach and Playa Del Rey. The chief difficulty is being encountered because of the large number of wells which are tied up in either bankruptcy or equity receiverships. Most of the receivers in equity have ignored orders of the two umpires and have flatly refused to recognize the curtailment program. This has caused considerable dissension among operators who are respecting curtailment orders on adjacent properties. The Oil Producers Sales Agency condemned the action of the receivers in equity in no uncertain terms. The resolution adopted by the sales agency says that "wasteful overproduction has already caused the financial breakdown of a large number of oil operators resulting in receiverships and said receivers have been requested by this agency and by the oil umpires to curtail their production, as receivers, of oil and gas to the end that they produce their fair share and their fair share only, of oil and gas which can be marketed in and from the State of California." The resolution charges that the receivers of the bankrupt properties, which incidentally have been rendered bankrupt by low prices because of overproduction, have refused to restrict their production to a fair allotment and in several instances have threatened the umpires with contempt proceedings for notifying buyers of their excessive overproduction. "Such conduct on the part of said receivers," concludes the resolution, "contributes largely to the difficulties of the oil industry, which difficulties continue to keep large numbers of persons out of employment; prevent the payment by the receivership estate of the debts thereof and increase the general economic depression now prevailing." The resolution closes with a demand on the receivers of bankrupt or financially embarrased concerns that they obtain court permission for the curtailment of their production in accordance with the California oil conservation program.

Devil's Den Wildcat

The Standard Oil Co. has not yet concluded the pumping test on No. 1 Alferitz, a wildcat in the Devil's Den area of Kern County, and developments indicate the possibility that another test may be drilled on this anticline. No. 1 Alferitz is pumping 50 bbls. of 16.1 gravity oil cutting approximately 30 per cent from a depth of 1,600 feet. The significance which attaches to this wildcat is

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total This week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	.....	.....	.....	.....	.....	68,690
Fuel oil	.....	.....	.....	.....	.....	71,950
Diesel and gas oil	.....	.....	95,122	13,589	987,352	1,984,189
Gasoline	97,042	13,863	427,176	61,025	7,688,943	9,946,154
Kerosene	.....	.....	.....	.....	89,109	.....
Coastwise—						
Crude oil	439,000	64,142	293,406	41,915	11,098,350	7,867,806
Fuel oil	114,411	16,344	471,601	67,373	7,021,861	8,767,148
Diesel and gas oil	17,103	2,444	34,113	4,873	823,036	1,023,128
Gasoline	488,704	69,815	294,303	42,043	7,226,066	6,266,003
Kerosene	9,927	1,418	17,278	2,611	196,654	96,332
Naphtha distillate	.....	.....	.....	.....	4,952	.....
Exports—						
Crude oil	239,061	34,152	75,089	10,727	3,759,091	3,546,374
Fuel oil	214,436	30,634	418,615	59,802	7,751,806	9,811,618
Diesel and gas oil	178,678	25,525	82,535	11,812	2,085,609	2,463,249
Gasoline	96,614	13,802	160,104	22,872	4,703,373	5,497,382
Kerosene	.....	.....	16,754	2,393	801,210	2,046,931
Lubricants	.....	.....	.....	.....	15,978	10,032

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC AND GULF PORTS

Diesel and gas oil	.....	.....	.....	.....	.....	28,280
Gasoline	.....	.....	.....	.....	405,469	641,650
Lubricants	.....	.....	.....	.....	21,990	5,866
Coastwise—						
Fuel oil	151,987	21,712	13,020	1,860	2,207,444	1,815,106
Diesel and gas oil	.....	.....	.....	.....	195,112	152,544
Gasoline	33,879	4,840	244,609	34,944	1,791,111	2,006,148
Kerosene	.....	.....	11,000	1,571	147,990	125,378
Naphtha distillate	.....	.....	.....	.....	49,780	.....
Exports—						
Crude oil	.....	.....	.....	.....	107,726	3,975
Fuel oil	.....	.....	13,020	1,860	720,901	481,000
Diesel and gas oil	.....	.....	.....	.....	294,708	231,990
Gasoline	72,560	10,366	244,609	34,944	2,256,797	2,213,023
Kerosene	.....	.....	11,000	1,571	440,002	377,591
Lubricants	.....	.....	.....	.....	.....	18,672
Naphtha distillate	.....	.....	.....	.....	20,100	.....

not because it indicates the possibility of developing commercial production at Devil's Den, but because of its geological relationship to Kettleman Hills. The oil from No. 1 Alferitz has a greenish brown tinge and is quite unlike any other oil produced in the San Joaquin Basin. Geologists of various companies interested in Kettleman Hills Field have been watching the outcome of work on the Standard's Devil's Den project for several months.

The interest being shown in this wildcat is attributed to the possibility that the production of No. 1 Alferitz is coming from a formation lower in the geologic column than the Temblor formation which has been found so highly prolific at Kettleman Hills. If, as geologists surmise, the Devil's Den production is coming from the Kreyenhagen shale, deeper drilling may be found productive in the Kreyenhagen shale at Kettleman Hills. Based on the depth already reached in the North Dome, operators will be obliged to drill down somewhere between 10,000 and 12,000 feet in order to reach the Kreyenhagen shale. If further development is successful and the next well registers commercial production, this work at Devil's Den may change the present accepted theory with respect to productive formations and lead to extensive development. Heretofore, operators have not been successful in securing production in Kreyenhagen shale and in a number of cases have suspended work when this formation was encountered. Known structures in the Kreyenhagen formation have heretofore been classified as unfavorable because of generally accepted geologic theory.

Weed Patch Area

There were no new developments in the Weed Patch area of Kern County, although the Shell has been attempting for several days to recomplete No. 1 Porter Day after plugging from 8,419 feet to 5,910 feet. No. 1 Duff of the Osborn Colter interests has also been swabbed for several days with negative results and the outlook for production in this well is not any too promising. The Alpine Oil Co.'s No. 1 DiGiorgio, a test located in Section 13-31-29, drilled into granite at 3,770 feet, and will be abandoned. In the Lost Hills Field of Kern County, the Universal Consolidated, a subsidiary of Richfield, has suspended drilling operations on its No. 49 in a fine gray sand at 5,755 feet. The Getty Oil Co. is still drilling ahead in No. 1-A Lincoln Drilling in Section 12-26-20 but is not yet deep enough to be of special importance.

Gato Ridge Discovery Killed

The Barnsdall and Rio Grande have killed No. 1 Tognazzini, a recent completion on the Gato Ridge anticline in Santa Barbara County, and present plans call for a suspension of work at least for the time being. This wildcat, which opened up a new field, has substantially increased the future reserves of the Barnsdall and Rio Grande as this structure should yield at least 50,000,000 bbls. of crude and be relatively long lived. The Chanslor-Canfield Midway Oil Co. is still working on No. 2-A Hobson, its 10,030-foot wildcat located approximately midway between the Rincon and Ventura Avenue Fields, but the outlook is not at all encouraging, at least from a production standpoint. In the Rincon Field, the General Petroleum is making preparations to finish No. 3 Ferguson and No. 2 Needham, both tideland projects, at the conclusion of which development work will be suspended. In the Elwood Field, the Barnsdall and Rio Grande have drilled out the cement in No. 1 Bishop-Evans, a deep Sespe test at 6,038 feet, and if a satisfactory water shutoff has been secured, drilling will be resumed and an early production test made. The Palisades Petroleum successfully effected a water shutoff in No. 3 Meigs, a drilling project in the Santa Barbara Mesa Field, and an early production test will be made. At Capitan the General Petroleum is drilling ahead in No. 10 Erburu in a red Sespe shale at 2,820 feet. On a flow test conducted at 2,795 feet this well made 4,290,000 feet of natural gas and a spray of oil. The Oakburn Oil Co. has suceeded in killing No. 1 Sperry, a tideland drilling project which came in several weeks ago flowing from 5,000 to 10,000 bbls. of salt water per day from 2,821 feet. The Western Gulf Oil Co., which recently landed a string of pipe in No. 1 Bradley, a wildcat near Santa Maria in Section 5-9-33, has just concluded a water shutoff test at 5,990 feet and work is being resumed. This well will bear watching during the course of the next few weeks.

Playa Del Rey

The Union Oil Co. finished No. 11 Townsite, a new well in the Playa Del Rey Field of Los Angeles Basin, early in the past week, and, while it only flowed 95 bbls. per day, production has been increased to 375 bbls. by putting it on the beam. This well was bottomed in the deep Recreation zone at 5,843 feet and finished with a 6⅝-inch oil string at 5,582 feet and a 4¾-inch liner carrying 270 feet of perforated. No. 8 Townsite, which was bottomed in the Schist at 6,134 feet, failed to register commercial production and drilling operations have accordingly been suspended.

Operators are still watching developments in the Huntington Beach Field with unusual interest because of the possibility that a deep drilling campaign may be precipitated in that area at any time. W. E. McCaslin's No. 17 Transport was rotating a few days ago in a hard gray sand showing oil and gas at 8,140 feet. If this well develops commercial production in this new deep zone, about 10 wells will be started within two weeks. The Wilshire Oil Co. has five wells rigged up in anticipation of deep production and will start drilling as soon as some tangible evidence is shown indicating the existence of a new zone. Up to the present operators have been in the dark so far as actual data is concerned, although it is generally admitted the Superior would not drill three wells unless something unusually promising had been found in the initial deep test. Wilshire Annex Oil Co.'s No. 1 Country Club, a recent completion in the Potrero Field of Los Angeles Basin, is still holding up in good shape, although current production, 1,025 bbls. per day, is cutting approximately 6 per cent. Continental Oil Co. is drilling ahead in No. 25 Selover in the Seal Beach Field and this well may be carried down in search of a new zone below present productive horizons. Graham & Loftus Oil Co. has resumed drilling in a wildcat in the East Coyote Field of Los Angeles Basin in Section 18-3-9, but the outlook at 8,515 feet is not any too promising.

MR. ROCKEFELLER 92

TARRYTOWN, N. Y., July 8.—John D. Rockefeller today observed his ninety-second birthday in excellent health.

In a birthday message to the world, Mr. Rockefeller said:

"These occasions offer me a very welcome opportunity; first, to express my gratitude to the many, many friends who not only at this time, but throughout the year, have shown their kindly regard to me, and, second, to wish them and theirs and all the world a large measure of health and contentment, which are the basis of real happiness."

EDWARD D. McDONALD DEAD

Edward D. McDonald, in the employ of the Pittsburgh Equitable Meter Co. since 1917, working out of the Chicago office, died recently. For several years Mr. McDonald had been manager of the gas meter and regulator business of the company in the Chicago area. Prior to his service with the Pittsburgh Equitable Meter Co. he was with the Peoples Gas, Light & Coke Co. of Chicago, starting as a meter repair man. Mr. McDonald leaves his wife and one son, Edward McDonald.

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Olympic Realty Corp., No. 1 Barnes, Los Angeles Co.	14- 2-15	6,078	abandoned
Hines Pet., No. 1 Ocean Park, Los Angeles Co.	9- 2-15	6,510	circulating
Taylor Oil Co., No. 1 Culver, Los Angeles Co.	12- 2-15	6,238	suspended
Mesmer City Corp., No. 1 Mesmer, Los Angeles Co.	24- 2-16	6,690	sd. sh. drilling
Dwyer & Becker, No. 1 Compton, Los Angeles Co.	17- 3-13	4,520	suspended
Allison Synd., No. 1 Baldwin, Los Angeles Co.	3- 2-14	5,110	suspended
Cal. Ventura Oil Co., No. 1 Manhattan, Los Angeles Co.	30- 3-14	6,525	suspended
Cal. Ventura Oil Co., No. 1 Hermosa, Los Angeles Co.	31- 3-14	3,396	suspended
Cal. Ventura Oil Co., No. 2 Hermosa, Los Angeles Co.	31- 3-14	3,300	suspended
Cal. Oilfields Corp., No. 1 Hermosa, Los Angeles Co.	31- 3-14	2,560	suspended
Carniel Oil Corp., No. 1 Hermosa, Los Angeles Co.	31- 3-14	3,114	suspended
McMahon & McDonald, No. 1 Watts, Los Angeles Co.	12- 2-14	4,665	suspended
Thorpe Pet. Co., No. 1 Hawthorne, Los Angeles Co.	10- 3-14	3,745	suspended
Alondra Oil Co., No. 1 Hawthorne, Los Angeles Co.	23- 3-14	rig	rigging up
Staple Oil Co., No. 1 Manhattan, Los Angeles Co.	24- 3-15	2,700	suspended
Pacific Shore Oil Co., No. 1 Lawndale, Los Angeles Co.	20- 3-14	rig	suspended
York & Smullin, No. 1 Watson, Los Angeles Co.	29- 4-13	4,310	testing
Wilmington Consd., No. 1 Watson, Los Angeles Co.	17- 4-13	1,012	suspended
Pedro Pet. Corp., No. 1 San Pedro, Los Angeles Co.	14- 5-14	....	location
Brubaker, W. O., No. 1 Van Nuys, Los Angeles Co.	11- 2-15	2,700	suspended
Rucker & Croul, No. 2 Puente, Los Angeles Co.	27- 2-10	2,200	suspended
Arden Oil Co., No. 1 Puente, Los Angeles Co.	15- 2-10	3,325	suspended
D. & B. Oil Co., No. 1 Puente, Los Angeles Co.	3- 2-10	4,620	suspended
El Dorado Oil Co., No. 1 Puente, Los Angeles Co.	30- 2- 9	1,575	br. sh. drilling
Marcel Pet., No. 1 Puente, Los Angeles Co.	31- 2- 8	3,100	suspended
Cudahy Oil Co., No. 1 Bell, Los Angeles Co.	30- 2-12	1,370	suspended
The Texas Company, No. 1 Montebello, Los Angeles Co.	4- 2-12	4,840	hd. sd. drilling
Blinn & Gray, No. 1 Montebello, Los Angeles Co.	6- 2-11	4,344	cleaning out
Weist Oil Co., No. 1 Montebello, Los Angeles Co.	34- 1-11	4,842	suspended
Yellowstone Oil Co., No. 1 Alhambra, Los Angeles Co.	24- 1-13	3,730	gr. sh. drilling
Yellowstone Oil Co., No. 2 Alhambra, Los Angeles Co.	19- 1-13	1,163	sd. drilling
Los Gatos Oil Co., No. 1 El Monte, Los Angeles Co.	16- 1-11	2,350	suspended
Rucker, L. W., No. 1 Calabasas, Los Angeles Co.	26- 1-17	753	cleaning out
Olympic Corp., No. 1 Calabasas, Los Angeles Co.	18- 1-17	5,960	suspended
Nesa Pet., No. 1 Newport, Orange Co.	21- 6-10	4,910	suspended
Hall, H. L., No. 1 Newport, Orange Co.	20- 6-10	790	suspended
Standard, No. 1 Newport, Orange Co.	26- 6-10	5,288	hd. sd. drilling
Western Gulf, No. 1 Santa Ana, Orange Co.	12- 3- 8	3,267	suspended
Gleck Oil Co., No. 1 Sunset Beach, Orange Co.	20- 5-11	5,512	br. sh. drilling
Beck, F. A., No. 1 Corona, Riverside Co.	8- 4- 6	490	sd. sh. drilling
Beck, F. A., No. 1 Beaumont, Riverside Co.	1- 3- 1	520	sd. sh. drilling
Grey, H. H., No. 1 Redlands, San Bernardino Co.	25- 1- 2	2,392	suspended
Borderland Oil Co., No. 1 Encinitas, San Diego Co.	13-13- 4	2,519	suspended
Borderland Oil Co., No. 1 Point Loma, San Diego Co.	30-16- 3	4,975	hd. sd. drilling
South Bay Oil Co., No. 1 Border, San Diego Co.	31-18- 2	....	material
Carr, O. K., No. 1 Capistrano, San Diego Co.	13- 8- 8	5,250	suspended

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Western Gulf, No. 1 Santa Maria, Santa Barbara Co.	5- 9-35	6,760	testing
Midwest Oil Co., No. 1 Los Alamos, Santa Barbara Co.	2- 7-33	2,850	sd. sh. drilling
Smith, W. E., No. 1 Lompoc, Santa Barbara Co.	18- 7-34	100	suspended
Zaca Oil Co., No. 1 Los Olivas, Santa Barbara Co.	20- 7-31	rig	suspended
General Pet., No. 1 Goleta, Santa Barbara Co.	21- 4-28	4,533	gas—shut in
General Pet., No. 2 Goleta, Santa Barbara Co.	21- 4-28	4,350	gas—shut in
General Pet., No. 3 Goleta, Santa Barbara Co.	21- 4-28	5,575	Sespe form.
General Pet., No. 133 Goleta, Santa Barbara Co.	21- 4-28	2,030	suspended
General Pet., No. 134 Goleta, Santa Barbara Co.	21- 4-28	2,053	suspended
General Pet., No. 136 Goleta, Santa Barbara Co.	21- 4-28	2,047	suspended
General Pet., No. 137 Goleta, Santa Barbara Co.	21- 4-28	2,050	suspended
General Pet., No. 138 Goleta, Santa Barbara Co.	21- 4-28	4,931	suspended
General Pet., No. 139 Goleta, Santa Barbara Co.	21- 4-28	2,051	suspended
Boles Oil Co., No. 140 Goleta, Santa Barbara Co.	22- 4-28	1,040	suspended
U. S. Pet., No. 141 Goleta, Santa Barbara Co.	20- 4-28	1,035	suspended
U. S. Pet., No. 142 Goleta, Santa Barbara Co.	20- 4-28	2,012	suspended
U. S. Pet., No. 143 Goleta, Santa Barbara Co.	20- 4-28	1,019	suspended
El Camino, No. 149 Goleta Tideland, Santa Barbara Co.	22- 4-28	1,035	suspended
Bolsa Chica, No. 191 Goleta, Santa Barbara Co.	24- 4-29	4,191	suspended
Bellview Oil Co., No. 159 Goleta, Santa Barbara Co.	24- 4-29	2,099	suspended
Cochran, J. H., No. 1 Naples, Santa Barbara Co.	7- 4-29	5,134	cleaning out
Johnson, George, No. 1-A Goleta, Santa Barbara Co.	19- 4-27	3,780	cleaning out
Sovereign Oil Co., No. 1 Guadalupe, Santa Barbara Co.	20-10-35	5,500	suspended
Pacific Western, No. 1 Gibraltar, Santa Barbara Co.	14- 5-27	2,345	suspended
Associated, No. 1 Rincon Creek, Ventura Co.	19- 4-24	2,080	suspended
C. G. M. O. Co., No. 2-A Rincon, Ventura Co.	23- 3-24	10,030	plugging back
Continental, No. 1 Rincon, Ventura Co.	23- 3-24	5,480	sd. sh. drilling
Bell, H. H., No. 1 South Mountain, Ventura Co.	22- 3-21	....	location
Pure Oil Co., No. 1 S. P. Canyon, Ventura Co.	15- 4-21	2,591	suspended
Superior Oil Co., No. 1 Sespe, Ventura Co.	14- 4-21	7,450	hd. sd. drilling
San Pedro Oil Co., No. 2 Sespe, Ventura Co.	13- 4-21	3,410	cleaning out
Magu Synd., No. 1 Oxnard, Ventura Co.	17- 1-21	4,910	suspended
Mex Cal Oil Co., No. 1 Conejo, Ventura Co.	12- 1-20	188	suspended
Hansen Pet., No. 1 Conejo, Ventura Co.	24- 1-20	230	suspended
Wilshire Oil Co., No. 1-A Buttonwillow, Kern Co.	7-29-24	7,000	recemented
Kent & McDonald, No. 1 Temblor Hills, Kern Co.	3-32-22	1,811	sd. sh. drilling
Calif. Oil Producers, No. 1 McKittrick, Kern Co.	30-30-22	2,850	fishing
Federal Drlg. Co., No. 1 Buena Vista, Kern Co.	20-31-24	5,367	suspended
General Pet., No. 1 Belridge, Kern Co.	30-28-21	5,300	reaming
The Texas Company, No. 1 Belridge, Kern Co.	22-27-20	5,045	suspended
Standard, No. 2 Belridge, Kern Co.	31-27-20	5,591	testing
Ohio Oil Co., No. 1 Belridge, Kern Co.	36-27-20	5,980	suspended
Continental, No. 1 Belridge, Kern Co.	36-27-20	5,253	testing
Wallace, K. C., No. 1 Belridge, Kern Co.	32-29-21	4,222	recemented
Rio Cal. Pet., No. 1 Shale, Kern Co.	2-27-18	2,355	suspended
Wicker, Sy, No. 1 Arvin, Kern Co.	12-30-28	1,250	cleaning out
Shell, No. 1 Weed Patch, Kern Co.	29-30-29	5,910	testing
Shell, No. 2 Weed Patch, Kern Co.	29-30-29	6,410	suspended
Shell, No. 3 Weed Patch, Kern Co.	32-30-29	9,585	sd. sh. drilling
Osborn, Colter, No. 1 Weed Patch, Kern Co.	15-30-29	3,815	plug 3,500 ft.
Osborn, Colter, No. 2 Weed Patch, Kern Co.	16-30-29	1,100	sd. sh. drilling
Mohawk Oil Co., No. 1 Weed Patch, Kern Co.	32-30-29	6,150	suspended
Mohawk Oil Co., No. 2 Weed Patch, Kern Co.	4-31-29	rig	suspended
Alpine Oil Co., No. 1 Weed Patch, Kern Co.	13-31-29	3,785	to abandon
Standard, No. 1 Devils Den, Kern Co.	14-25-18	1,600	pump 50 B./D.
Hannah, Tom, No. 1 Devils Den, Kern Co.	25-25-18	2,925	suspended
Cumberland Oil Co., No. 2 Devils Den, Kern Co.	21-26-18	416	sd. drilling
Temblor Dev. Co., No. 1 Blackwell Corner, Kern Co.	14-26-19	1,030	suspended
E. J. Miley, No. 1 Blackwell Corner, Kern Co.	17-26-19	rig	suspended
Moran & DeCamp, No. 1 Mojave, Kern Co.	26-10-14	750	suspended
Kendall Dev. Co., No. 1 Mojave, Kern Co.	27-11- 9	511	cleaning out
Meridan Oil Co., No. 1 Antelope, Kern Co.	11- 9-15	3,804	suspended
Ritchie, J. J., No. 1 Tejon, Kern Co.	33-11-19	6,025	suspended
Associated, No. 1 Jacalitos, Fresno Co.	23-21-15	5,675	hd. sd. drilling
Panorama Oil Co., No. 1 Carizzo, San Luis Obispo Co.	7-31-21	4,019	suspended
Trav El Oil Co., No. 1 Carizzo, San Luis Obispo Co.	7-32-22	2,030	suspended
Cities Service, No. 1 Creston, San Luis Obispo Co.	20-28-15	1,520	sd. sh. drilling
Paso Robles Synd., No. 1 Paso Robles, San Luis Obispo Co.	34-27-11	4,015	suspended
Latin Amer. Pet., No. 1 Shandon, San Luis Obispo Co.	21-27-15	4,615	recemented
Schilling, C., No. 1 Atascadero, San Luis Obispo Co.	24-28-12	1,220	cleaning out
Schockley, C., No. 1 Pismo, San Luis Obispo Co.	13-32-13	3,094	suspended
Jergins, A. T., No. 1 Arroyo Grande, San Luis Obispo Co.	6-32-13	1,010	sd. sh. drilling
Pacific Inland, well No. 1, Monterey Co.	19-23-15	1,340	suspended
Irma Investment Co., No. 1 Dudley Ridge, Kings Co.	7-23-20	1,345	gas well—idle
O'Donnell, J. E., No. 1 Dudley Ridge, Kings Co.	7-23-20	1,635	gas well—idle
Eagle Oil Co., No. 1 Dudley Ridge, Kings Co.	15-23-20	rig	suspended
Kettleman Lakeview, No. 1-A Dudley Ridge, Kings Co.	20-23-20	1,094	sd. sh. drilling
Purman, T. H., No. 1 Reef Ridge, Kings Co.	36-23-17	3,975	br. sh. drilling
Seymour, L. W., No. 1 Avenal, Kings Co.	10-23-16	1,148	cleaning out
Twin State Oil Co., No. 1 Point Arena, Mendocino Co.	14-12-17	6,550	sd. sh. drilling
Orinda Pet., well No. 1, Contra Costa Co.	32- 1- 3	2,350	cemented
Ducor Pet. Co., No. 1 Ducor, Tulare Co.	14-24-27	2,180	suspended
Inland Valley Oil Co., No. 1 Visalia, Tulare Co.	24-17-24	2,092	suspended
Ellis & Stanford, No. 1 Tulare Lake, Tulare Co.	20-24-23	1,050	sd. sh. drilling
Ellis & Stanford, No. 2 Tulare Lake, Tulare Co.	20-24-23	220	abandoned
Colusa Oil Co., No. 1 Bush, Colusa Co.	31-15- 4	930	hd. sd. drilling
Oakdale Oil Co., No. 1 Oakdale, Stanislaus Co.	3- 2-10	4,170	hd. sd. drilling
Orland Oil Synd., No. 1 Orland, Tehama Co.	31-23- 3	3,520	redrilling
Sargent Oil Co., No. 1 Sargent, Santa Clara Co.	1-12- 3	rig	suspended

Few Completions in Eastern Fields

Ten Producers With Three Dry Holes. Interest Swinging From Lower Fields to Upper Country, Tioga, Pa., and Wayne County, New York

By Staff Correspondent

PITTSBURGH, Pa., July 13.—Reports of completions in the three districts of the lower eastern fields dropped to a new low point. From the entire field, but 10 producers, along with 3 dry holes, were recorded. The interest of the larger operators has swung away from the lower fields, for the present, to the upper country in the development of the Tioga County, Pennsylvania, and Wayne County, New York, new gas pools, where several hundred million feet of gas is now shut in. Particularly active in those fields are the Columbia Gas & Electric Co. and the Lycoming Gas Co., a newly formed subsidiary of the Standard Oil Co. of New Jersey.

In Southeast Ohio there were six completions during the week and one was a very fair gas well. In the SW of Section 3, Brush Creek Township, Muskingum County, the Fritz Oil & Gas Co. completed a test on the B. F. Floyd farm. It is a Clinton sand well at a depth of 4,028 feet and started in with a flow of over 2,500,000 feet a day.

In Athens County the Hocking Valley Drilling Co. and others completed No. 4 on the Hocking & Athens Coal Co. tract in the NW of Section 35, York Township. The Clinton sand was found at 3,488 feet and it produced 2 bbls. the first 24 hours natural, which after shot was increased to 15 bbls. the next day.

There were two completions in the shallow drilling in Medina County, one a slight extension of that pool. On the well drilled and productive lease, E. R. Edson & Son Co. continued their success with No. 20 M. A. and Eva Franks, Lot 20, Section 16, Chatham Township. It produced 15 bbls. the first day after shot from a depth of 459 feet. On Lot 12, in the NW of Fitchfield Township, the same operators drilled a test on the Mary L. D. Yost farm. It is a 1-bbl. pumper after shot from the Cow Run at a depth of only 314 feet.

On a town lot in the village of Racine in Sutton Township, Meigs County, James Simpson drilled a test on his own property. It was a dry hole through a depth of 420 feet in search of the Cow Run sand, which was badly faulted. A second duster was reported and this was in Section 2 of Bethel Township, Monroe County, and was the second test of F. O. Parks and others on the Charles Bowers farm. It was drilled in the Lime sand at a depth of 1,205 feet.

Drilling in Ohio

In Section 11, Franklin Township, Monroe County, Cunningham and others have reached 900 feet on the H. F. Crum farm, and the Monroe Bank of Woodsfield Account No. 115 is past the 800-foot level in a second well on the Mason N. Hogue farm. In Noble County the following is noted: In Section 32, Enoch Township, Way Wickens and others have rigged up for a second test on the J. M. Rowlands farm. In Section 8, Sharon Township, Charles Knott and others are down to 800 feet on the Moody Archabold farm.

In Washington County, J. C. Ogle is down to 410 feet on the J. C. Ogle lot in Section 18, Aurelius Township. In Newport Township, Zwingle Brothers have reached 1,100 feet on the Michael Edwards farm. In Section 14, Liberty Township, Otto Heldman and others are about in the sand on the Joseph Doyle farm.

In Vinton County there are two wells drilling. The Kelch Brothers are drilling a second well on the L. P. Backus farm in Section 35, Knox Township, and the Co-operative Oil Co. has a test drilling on the Cameron S. Clark farm in Section 5 of the same township.

WEST VIRGINIA

No oil wells were reported from West Virginia and but four gas wells were completed and a report of a duster. The largest gasser is rated about 500,000 feet a day and was the test of Creed Barker and others on the Methodist Episcopal parsonage lot in Lee district, Calhoun County. It was drilled in the Injun sand at a depth of 2,270 feet. In Sherman district of the same county, Lewis P. Bickel drilled his test on the Martha Stump heirs deeper from the Salt sand to the Injun sand and has a small gas well.

In Marion County, Monroe & Laughlin have a gas well on the E. J. Dye farm in Mannington district and from a depth of 2,507 feet. In Raleigh County, Godfrey L. Cabot continued his activity there with No. 5 on the Beaver Coal Co. tract in Slab Fork district. It was completed in the Big lime at a depth of 2,900 feet and is showing for a fair gas well.

Drilling in West Virginia

In Logan County, W. G. McCorkle and others are down to 835 feet on the Susan Hill farm in Chapmansville district. In Logan district the West Virginia Natural Gas Co. has made a location for No. 27 on the Dingus Run Coal Co. tract. In Wirt County the Heck Oil Co. is down to 400 feet in No. 3 on the J. E. and J. G. Watkins farm in Reedy district. In Burning Springs district, Fred Morehead has started drilling his No. 8 on the J. W. Hickman farm, and L. E. Shenk and others have their No. 10 on the W. H. H. Wheaton under way. In Clay district, Pollack & Myers have started drilling on their own lease and are down to 270 feet, and the Garrity, Burke Oil & Gas Co. has a rig standing for No. 7 on the J. L. Showalter farm. In Reedy district, W. A. Bickerstaff is down to 1,550 feet on the Mary E. Dicks lease.

In Wayne County the Owens Illinois Bottle Co. has made a location on the T. A. Copley farm, Lincoln district. In the same district the Wayne United Gas Co. is down to 1,720 feet in No. 40 on the A. W. Wilson heirs tract and has made a location for No. 49 on the same lease. In Jackson County, Harvey Starr and others have reached a depth of 3,500 feet on the Harvey Starr farm in Grant district and have shut down testing.

In Pleasants County, and in Jefferson district, H. M. Adams and others have two wells drilling, one on the James Ruckman and one on the Charles Ruckman farm. In Union district, Frank Webb and others have hauled in the drilling machine for No. 2 on the Frank Webb farm. In Doddridge County, J. H. Pents is down to 2,250 feet in No. 11 on the Zed Underwood farm in McClelland district. In Clay County, C. F. Wilson and others have reached 1,240 feet on the A. B. Hersman farm in Henry district, and in Pleasants district Godfrey L. Cabot has built a road to his location for No. 9 on the Hill-Long tract. In Hancock County, Charles Spriggs has shut down at 2,490 feet on the W. L. Smith farm, Clay district. Again in Pleasants County, T. L. Shop and others have started drilling in Lafayette district on the I. T. Gorrell farm and have reached 250 feet. In McKim district, Dinsmore and Co. have made a location on the George Leonard farm.

In Cabell County the following tests are drilling: In Barboursville district the West Virginia Gas Co. is down to 1,940 feet on the Etta Bowen farm, and on the W. P. Earl farm is in the sand at 3,154 feet. In Grant district the Harshbarger Oil & Gas Co. has a rig standing for a second well on the J. A. and Oscar Conner farm. In McComas district, R. H. Adkins and others have made a location on the B. L. Perry farm, and have reached the Berea sand at 2,323 feet on the Reynolds and Whitney farm. In Wuyandot district, Wilson & Mowery are hauling in the materials on the Hans-Watts Realty Co. tract.

In Kanawha and Boone Counties the Pure Oil Co. and the Owens Illinois Bottle Co. are still active. In Cabin Creek district, Kanawha County, the Pure Oil Co. has rigged up for No. 254 on the Williams Coal Co. tract and has prepared a location for No. 255 on the same lease. In Sherman district, Boone County, this company is drilling at 2,946 feet in its No. 52 on the Federal Coal Co. lease, and 1,725 feet in its No. 53, and has a rig standing for its No. 256 on the Williams Coal Co. land, and a location for No. 42 on the Lafollette, Robson and Prichard tract. In Kanawha County the Owens Illinois Bottle Co. has the rig and part materials ready for its No. 10 on the C. Q. Crockett farm. In Peytonia district this company has reached 1,813 feet in No. 9 on the Safe Deposit & Trust Co. lease, Boone County, and has a rig standing for No. 7 on the Broun-Cochran farm. In Scott district the same company has the rig and part materials on the ground for No. 2 on the S. M. Wheeler farm, and No. 21 on the Cassingham and others tract. In Washington district, it has a location prepared on the Letha Myers farm, and one for a second test on the Little Coal Land Co.

SOUTHWEST PENNSYLVANIA

In Southwest Pennsylvania there were two completions, one under peculiar circumstances. In Franklin Township, Greene County, on the newly completed Greene County Children's Home tract, in drilling for a water supply, a heavy flow of gas was struck at a depth of 350 feet. This is believed to be in the Pittsburgh Coal vein. The flow of gas is estimated to be in the neighborhood of 1,000,000 feet a day, and when met had considerable force behind it. The county officials plan to tube the well and use the gas for heating purposes in the home, which is about 200 feet from the well.

In Wayne Township the Manufacturers Light & Heat Co. completed its No. 3,443 on the Felix Bell farm in the Bayard sand at a depth of 3,465 feet. It is a fair gas well.

In Beaver County, C. O. Inglefield and others are drilling on the D. P. Inglefield farm in Hanover Township. In Independence Township, James P. McCloy and others have a second test drilling on the James P. McCloy farm.

In Greene County the Manufacturers Light & Heat Co. is close to the sand in its No. 2,851 on the J. J. Griffith farm in Center Township, which is being drilled deeper and is now at 3,250 feet.

MANY FACTORS TO BE CONSIDERED IN THE SELECTION OF POSITIVE DRIVES

In the selection of the proper positive drive for a given service, the following suggestions published through the courtesy of the Link-Belt Co., Chicago, may aid in determining which will give the most satisfaction. Each type of drive has its place and the illustrations may help in the proper installation of the best positive power transmission medium for a specific service.

Silent Chain

Silent chain is the best "first reduction" drive in most cases, with reductions of speed up to 15 to 1 being entirely practicable and satisfactory. This makes possible a large saving in the motor installation as high speed motors from stock can be used, with silent chain reductions to the slow speed shaft.

Silent chain cannot slip; its motion is positive under all conditions; it keeps production up to a predetermined rate; its uniform motion eliminates "seconds" in the product; it runs slack, with tension on the pulling side only, and total friction so slight that silent chain delivers to the shaft or machine 98.2 per cent of the energy of the prime mover.

This drive is not affected by atmospheric conditions, operating equally well in hot, cold, damp or oily places. It permits economy of space, as center distance of shafts can be arranged to suit the most convenient location of the driving and driven units.

The smooth, uniform action of the silent chain continues throughout the life of the drive, whether for a light machine requiring a fraction of a horsepower, or for heavy line shaft drives, or where overloads or shocks are encountered.

Roller Chain

Roller chain has won a substantial place in the field of power transmission, and an increasing use for conveyors. The strength and serviceability of roller chains are strikingly shown in their use on both light and heavy-duty industrial drives, motor trucks, tractors, farm implements, and numerous other installations.

Roller chains should be used within their proper range of applications so as to give the maximum service per dollar of investment. They carry heavy loads at moderate chain speeds, and are extremely efficient and durable on second reduction drives and similar applications.

The accompanying illustrations show the many ways this type drive should and should not be installed, to give the best service.

Roller chain drives will operate satisfactorily with almost any proportion and relative position of wheels, and with slack either on upper or lower side. Cuts A, B, C and D show good practice.

When the center of the large wheel is directly over that of the smaller, as in E, the drive cannot be run with much slack in the chain. As a chain elongates with wear, it will be necessary to make frequent adjustments of center distance, or use an adjustable idler on the back of the chain to take out the slack and preserve proper contact of chain with the small wheel.

If this drive can be slightly inclined, as at F, it will require less care and adjustment.

With horizontal drives having small wheels, it is preferable to have the slack on the bottom, as at H, rather than on top, as at G, for if the slack is allowed to accumulate, the chain is damaged by striking one strand against the other.

In horizontal or inclined drives with short centers, the slack should be on the bottom, as at J, for the accumulation of slack on top, as at K, would cause the chain to pinch between the wheels.

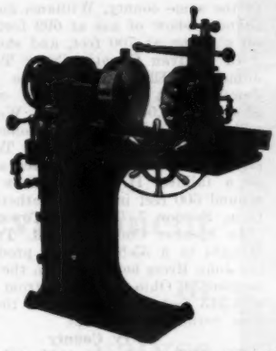
Herringbone Speed Reducers

Herringbone speed reducers can be economically applied to all classes of service, no matter how light or heavy it may be.

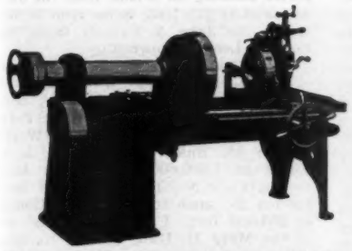
The quietness of operation, high effi-

(Continued on Page 76)

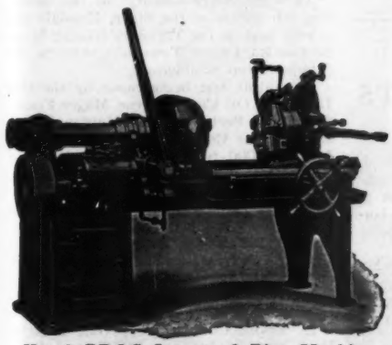
Less trouble ❖ ❖ Less Fuss ❖ ❖ More Threads



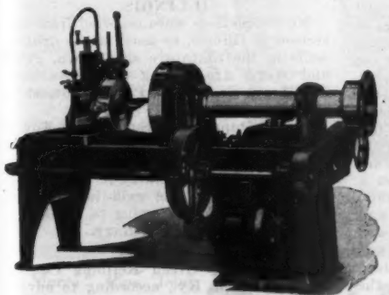
No. 2 B & K Improved Pipe Machine. Pipe capacity ¼" to 2" diameter.



No. 2 and No. 3 Peerless Improved Pipe Machine. Capacities ¼" to 2" and ¼" to 3" respectively.



No. 2 PDQC Improved Pipe Machine with single pulley drive and Landis Die Head. Pipe capacity ¼" to 2".



Rear view of machine, showing constant speed motor drive. All gears are shielded.

SHOP men and field men prefer Bignall & Keeler Threading Machines. Their enviable reputation among oil field men for doing their work speedily, accurately, and without fuss or trouble is the result of 50 years of successful performance. Pipe shops that know costs can tell you the economy of B & K machines—how they seldom require any repairs, and how they can be depended on to turn out perfect threads even with unskilled labor.

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Edwardsville, Illinois

PEERLESS B&K DUPLEX P·D·Q·C

OGJ 7-16 Gray

Central Ohio and Indiana Completions

Lima Has Dry Hole, Central Ohio Three Dusters and Eight Gas Wells. Indiana Has Several New Wells, Illinois None

By George A. Whitney
Staff Correspondent, Central West Fields

FINDLAY, Ohio, July 13.—The only two divisions of the Central West Field that showed anything worthwhile in the way of completions were the Central Ohio and Indiana divisions. In the old Lima Field of northwestern Ohio only one well was reported completed being Wood and others' test on the C. P. Troup farm, Section 23, Pitt Township, Wyandot County, which was dry at at total depth of 1,575 feet. The top of the Trenton was found at 1,435 feet with only a slight showing at from 1,455-1,525 feet, but not enough to make a commercial producer of either oil or gas. McKinney & Drickler are drilling a test on the Barton Ramsbury farm, Section 17, Tymochtee Township, same county, and Jones and Coyle are starting a test on the Robert and Richard Criswell farm, same section. Harpster and others have a rig up on the Lewis J. Beis, Section 11, Crawford Township, same county, and Newcomer and others are drilling on the Charles Neale farm, Section 28, Crane Township, also in Wyandot County. This county, in the early nineties, showed a nice production of oil, but was exhausted more quickly than the more northern counties of the State.

M. Gray is drilling a test on the Keil Brothers farm of 100 acres, Section 28, Springfield Township, Lucas County, west of Toledo, and in Providence Township, same county, the Lake Shore & Southwestern Metal Co. is starting a test on the Francis Oberly farm. In Henry County, same company is drilling two wells in Monroe and Damascus Townships.

CENTRAL OHIO

Eleven wells were completed in the Central Ohio Field, of which three were dry holes and eight were gas wells, there being no oil producers. In new work starting there were 6 locations and 8 wells spudding or rigged up, making a total of 14.

In Ashland County, the Ohio Fuel Gas Co. has a gas well in No. 1-3752 Mable E. Heifner farm, Section 12, Miflin Township, in the Berea sand, but rather light.

In Lorain County, McMillan and others' No. 1 J. H. Akins farm, Lot 68, Columbia Township, is a fair gas well at 2,662-75 feet.

In Medina County, Homer Township, Barnhart and others are drilling on the J. A. Holshoe, Section 17, and the Commonwealth Gas Corp. has a rig on the C. Fenstermaker farm, Section 18, same township.

In Wayne County, Congres Township, the Ohio Fuel Gas Co. found a gas well in No. 1-5096 George Wohlgamuth farm, Section 32. Bryan and others drilled a dry hole in a second test on the Mary Brinkerhoff farm, Section 23, Plain Township, from 705-30 feet, and in Canning Township, same county, Edington and others hit a dry spot on the J. W. Edington farm, Section 15, in the Berea sand from 525-87 feet. Barnhart and others are drilling on the George Elser farm, Section 4, Chester Township.

In Summitt County, East Ohio Gas Co.'s second test on the S. and K. DeWalt farm, Section 25, Franklin Township, was dry in the Clinton lime from 4,034-74 feet.

In Muskingum County, Brush Creek Township, the Fritz Oil & Gas Co. has a nice gas producer on the Eliza J. Dozer, Section 3, in the Clinton lime from 3,973-4,028-33 feet. W. H. Atha is drilling No. 4 on his own farm, Section 5, Falls Township. The Atha Co. made a location for No. 5 L. M. Bryan farm, Section 30, Washington Township, same county.

Athens County

In Athens County, Waterloo Township, the Standard Natural Gas Co. has an average gas producer in No. 4 A. J. Young farm, Section 12, in the Berea sand from 1,045-48 feet.

In Tuscarawas County, Clay Township, the Ohio Falls Drilling & Supply Co. is starting a test on the Harry Long farm, Lot 22. Local Oil Co. is drilling on the George J. Nartley farm, Lot 4, Sand Township. Hopewell Gas Co. is drilling No. 1 A. E. and H. B. Quigley farm, Lots 23, 27 and 29, Washington Township.

In Stark County, Jackson Township, is the most active part of the Central Ohio Field. East Ohio Gas Co. drilled in a nice gas well in No. 1 John Strouble farm, Section 23, in the Clinton lime from 4,350-67 feet. Ohio Fuel Gas Co. struck an excellent gas well in No. No. 1-5485 W. H. LeBeau farm, Section 15, same township. Brendall and others also hit a nice gas well in No. 4 on the Lake Cable Co. property, Section 14, same township, also in the Clinton from 4,389-4,419 feet. No. 3 on this lease is still uncompleted. Wittmer Properties Trustee is drilling on the J. Kostelink farm, Section 15, Lawrence Township, same county.

In Knox County, Howard Township, H. E. Perkins is drilling on the Gertrude Weaver, Lot 17.

In Belmont County, Somerset Township, John Jefferies and others made a location on fee property, Section 31.

In Morrow County, Chester Township, H. E. Perkins failed to find the Clinton at 2,206 feet on the C. R. Levering farm, Lots 5 and 9, and expects to test the Trenton formation.

INDIANA

Attempts are being made in Indiana to bring forth some new oil and gas producing areas, as little has been done in a wildcat way for a number of years, and for that reason quite a number of new wells have been brought in in various sections of the State.

In Gibson County, Columbia Township, the Wabash Public Service Corp.'s test in the southwest corner of the Ralph Onyett farm, NE, Section 22, produced 7 bbls. initially from 1,456-60 feet.

In Pike County, Washington Township, Vern Burden is drilling on the Preston heirs' farm, Section 29, and in the Alford Pool. Harry N. Bell is drilling on the R. M. Craig farm, NE, Section 19, same township, and unknown parties are working on the Everette Crowe farm, same township.

In Daviess County, Harrison Township, Norris & Patterson have a dry hole on the Albert Batchelor farm, SW, Section 33, which was dry at 780 feet. Bert White is drilling on the David Arms farm, NW, Section 33, and Harry Hanson is drilling on the Oliver Smith farm, SE, Section 4, same township, and Ben D. Ruble is drilling on the Bernard Gilloogy farm, NW, Section 4, same township. Near the town of Montgomery, in the same county, Williams and others found a show of gas at 699 feet and an oil showing at 700 feet, and shut down.

In Sullivan County, Curry Township, James C. Ellis' test on the William Jewell farm, Section 29, is estimated good for 500,000 feet of gas. Wade Connelly's test on the Dave Holden farm, NW, Section 29, Haddon Township, struck salt water at 825 feet and goes as a failure. H. Huntsman is drilling around 600 feet in No. 3 Katherin Piety farm, Section 7, Thurman Township.

In Spencer County, E. M. Treat Co. brought in a 35-bbl. initial producer on the John Bretz heirs farm, in the NE SE Section 34, Ohio Township, from a depth of 1,313 feet. The well is in the southwest corner of the farm.

Perry County

In Perry County, Moorehead & Blank's test on the Albert Gruver farm, Section 9, Anderson Township, is reported showing for 5 bbls. from the Jackson sand at 278 feet. Same firm is drilling on the John A. Cassidy farm, Section 16, Leopold Township.

Knox County is attracting the attention of gas operators, and while the wells are not large, they are shallow, being around 700 feet in depth. Gardner Petroleum Co.'s No. 1 Blann estate, SW SW Section 15, Busseron Township, is reported at 1,000,000 feet. Knox Engineering Co.'s No. 1 C. H. Snapp farm, Section 25, same township, is estimated at 250,000 feet. Unknown parties' test on the Mary M. Hall, Section 15, same township, is reported at 500,000 feet, at 700 feet. Parker & Lloyd reports a dry hole in No. 1 Lance W. Hall farm, SE Section 16, also in Busseron Township.

In Vanderburg County, in the southwestern corner of the State, Randall and others' test on the Theodore Kinder farm, Section 33, Center Township, showing for 5 bbls. initial production.

A wildcat test being made by the Old Dominion Oil Corp. on the Mager-Fisher farm, SW Section 4, Washington Township, Greene County, is reported showing for 1,000,000 feet of gas at a depth of 2,030 feet. There was also a gas pay at 350 feet.

Dearborn Development Syndicate is drilling on the Christ Schumacher farm, Section 27, Kelso Township, Dearborn County. Old Dominion Corp. is drilling on the Walter Suphine farm, NW Section 9, Washington Township, Greene County.

In Adams County, in the old Trenton Rock area of Indiana, M. T. and Lida I. Atwood abandoned old Nos. 3 and 4 N. E. Logan farm, Section 22, Blue Creek Township.

ILLINOIS

No completions were reported from any section of Illinois, as most of the drilling wells in the State are shut down. Price and Weger are drilling on the S. Stanfield farm, Section 36, Prairie Township, Crawford County.

In the Dupo Field, Sugar Loaf Township, St. Clair County, southeast of East St. Louis, Hans Wolf abandoned his No. 3 on the Oliver Anderline, in Section 33. Most of the producing wells in the Dupo Field are shut down owing to the heavy overproduction in the country.

KENTUCKY

The Bowling Green Refining Co., of Bowling Green, Ky., according to advice from Frankfort, the state capital, capitalized at $110,000, was granted a charter by Ella Lewis, secretary of state. Incorporators were John H. Wright, George McGinley, H. T. Downing, W. P. Harley and S. H. Massey.

The Ohio Oil Co. and the Illinois Pipe Line Co. announced to the Times Journal

(Continued on Page 84)

DOZEN TESTS ARE NOW DRILLING IN ISABELLA-MIDLAND DISTRICTS

By George A. Whitney

MOUNT PLEASANT, Mich., July 11. Although no completions were reported in the Isabella-Midland Fields, nearly a dozen different wells in widely separated localities of the field are being put down and pay formation in some of the projects is expected within the next week or so. A general survey of the field showed one well drilling in the Broomfield gas pool, about 12 miles west of Mount Pleasant, and a second well is expected to get under way soon. The Willie well of the Pure Oil Co. is the only one drilling in Bloomfield Township at this time. Parting of the pipe has delayed considerably the progress of the well. Gas Producers, Inc., expected to get its Stilgenbauer-Johnson well under way within a few days.

In Vernon Township, Isabella County, two oil wells are being put down while a third is hunting for gas. Meridian Oil Co. is putting down No. 1 Russell on the Woods lease of the E. Brown Development Co. The third well for gas, a project of George Talbot, is under way on the Campbell farm, Section 35.

McKay & Mercier are drilling the Bicknell farm well in the N SW Section 6, Grant Township, Clare County, northwest of the town of Clare.

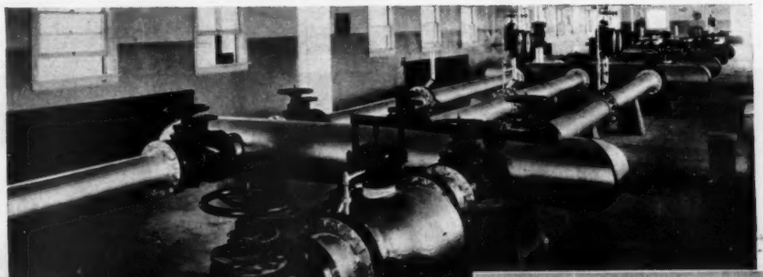
In the Midland Field, where interest has been revived by the striking of oil in a well beyond the previously proven field in Greendale Township, Midland County, activity continues to increase. Five wells are under way: The Kalamazoo Improvement Co.'s No. 2 Fred McLaughlin, Section 15, south offset to the Hornick; No. 2 Skinner, west offset of the Hornick, by the Gordon Oil Co.; No. 1 A. J. Struble, SW SE Section 10, by W. L. McClanahan; No. 1 Bernard, Section 8, by the Pure Oil Co., and the State Isabella B-7, Chippewa Township, Isabella County, also by the Pure Oil Co.

A west offset well to the A. J. Struble well in Section 10, Greendale Township, Midland County, is to be drilled by A. J. Talbot, the rig being under construction. Pure Oil Co. has obtained a permit for a well location on the Wampler, Section 9, Greendale Township, same county, a west offset to the Gordon Oil Co.'s No. 1 Skinner farm.

Fifteen miles northwest of Toledo and 1½ miles northwest of Ottawa Lake, in Riga Township, Lenawee County, Michigan, the D.O.H.I. Oil Corp., under the supervision of Mr. Daugherty of Denver, Colo., and on the William Farrow farm, SE NE Section 13, was visited Friday, and the well had reached a depth of 676 feet with a hole nearly full of water, but will be made a test in the Trenton limestone formation. At around 450 feet a nice gas volume was shown, the water being found below the gas sand, and would have made a commercial gas well had it been stopped when the gas was found, but the contract calls for a deep hole, and if oil or gas is found in the Trenton it means the opening of a new field far from production. Mr. Daugherty appears to be confident he will find something worth while, and will drill another test as soon as the Farrow farm well is completed. One interesting thing at this well is the fact that the power comes from a large automobile engine which has great power.

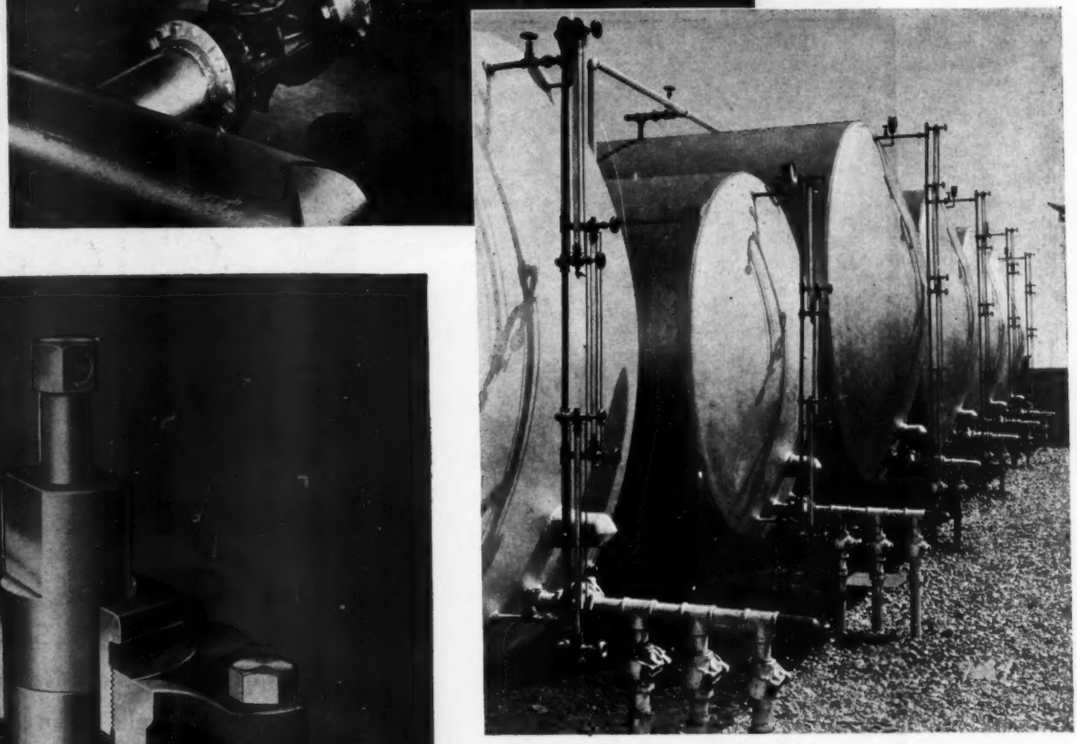
NORDSTROM VALVES

The most advanced development in valves



—the perfect application of a principle....

View to left shows a measuring station with Nordstrom Valves. The view below shows installation of Nordstrom Valves in an Oklahoma City refinery.



NOT merely lubricated valves—but Nordstrom Valves with "Sealdport" lubrication. Nordstrom is the pioneer valve. It made possible the adaption of the plug cock principle to large as well as small sizes and for high and low pressures. Then came "Sealdport" lubrication—the latest Nordstrom development that places these valves still further ahead. This patented valve lubrication provides a complete lubrication seal around both inlet and outlet ports, thus effectively preventing leakage through the valve or to the exterior.

Nordstrom Valves are made in various types for different services in the oil and gas industry. Ask for catalog.

"Merco" Pipe Joint Flange—for use with welded pipe lines requiring insertion of valves and fittings for the taking off of outlets. Extremely flexible. Sizes 1½" to 10".

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Agencies:
Denver - Republic Supply Company, 332 Continental Oil Bldg.
Honolulu - W. A. Ramsay Co., Ltd., Fort & Queen Streets
Philadelphia - Brown, Wilson & Company, 1600 Arch St.
Saginaw - Arthur C. Beckert, 112 Durand St.
Salt Lake City - National Equipment Co., 101 West 2nd South St.
Tulsa - B. V. Emery & Company, 216 N. Brady Street

Factory - Oakland, Calif.

Canada - Peacock Bros., Ltd., Montreal, Toronto, Winnipeg, Vancouver. (Also Sydney, N. S.)
England - Audley Engineering Co., Ltd., Newport, Shropshire.
Buenos Aires, Argentine - General Electric, Soc. Anon., Victoria 618 Esq. Peru.

100,000 CAPACITY

OKLAHOMA'S BIGGEST

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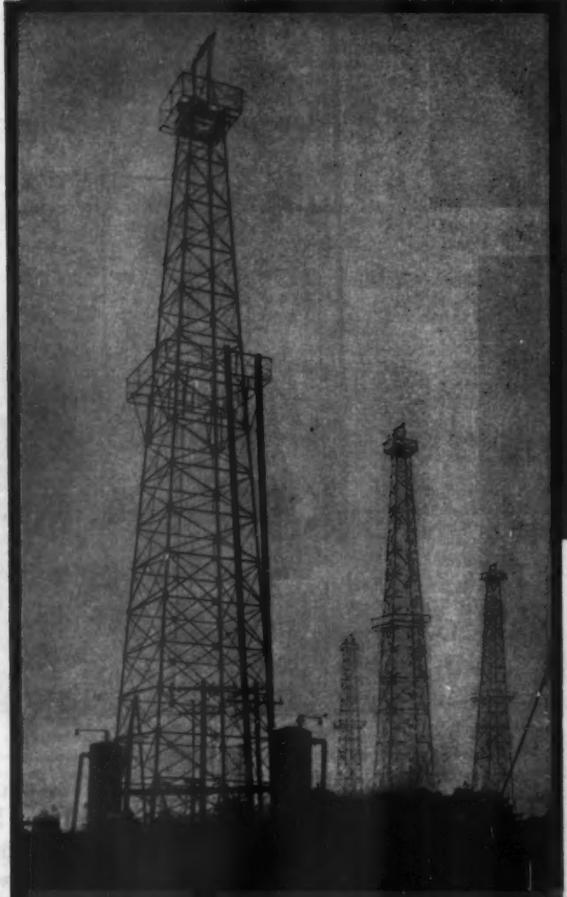
6310 FT.

9⅝" O.D., 40 LB.

PITTSBURGH SEAMLESS HIGH TENSILE CASING



Phillips Petroleum Company's Macbeth Number 1, Oklahoma City Field • • • Estimated daily capacity 100,000 barrels

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Large storage yard stocks at Memphis assure prompt service to Mid-Continent and Gulf Coast Fields.

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Pittsburgh Seamless

DRILL PIPE • CASING • OIL WELL TUBING

Oil Men in Field Caught By The Journal's Cameras

1—Sinclair-Texas Pipe Line Company, Oklahoma City station. Walter Browning, engineer; Bert Easthan, telegraph operator. 2—Robert R. Penn, Penn Oil Company, Dallas, Tex. 3—D. T. Heard, refinery superintendent, East Texas Refining Company, Henderson. 4—A. C. Sturgis, chemist for the East Texas Refining Company, Longview. 5—J. W. (Red) Selby, chief scout for the Shell Petroleum Corporation, Dallas, Tex. 6—Warren A. Sinsheimer, Henry L. Doherty Company, New York City; and A. W. Ambrose, Empire Company, Bartlesville, Okla. 7—Frank R. Coates, Henry L. Doherty Company, New York City; and Harry D. Frueauff, Cities Service Company, New York City. 8—Tom King, foreman, A. F. Day Construction Company; and Ted Judd, inspector for Sinclair-Texas Pipe Line Company.

Personal Paragraphs About Oil Men

W. E. Riley, of the Simms Oil Company, Dallas, Tex., was recently married to Miss Bula Martin of the same city.

* * *

R. W. Farnborough, until recently field manager of the North European Oil Corporation, has returned to London from Germany.

* * *

R. E. Fritch, vice president of Tube-Turns, Incorporated, Louisville, Ky., was in Tulsa calling on the company's Mid-Continent distributors.

* * *

B. F. Sharp and E. C. Vanada of the St. Louis office of the Wheeling Steel Company, Wheeling, W. Va., were Tulsa business visitors recently.

* * *

F. R. (Doc) Oldham, purchasing agent for the Gulf Pipe Line Company, Houston, Tex., is in Tulsa this week making a tour of Oklahoma fields.

* * *

T. W. Horn, independent oil man, Houston, Tex., accompanied by Mrs. Horn and party, is making a several weeks' trip around the Great Lakes.

* * *

J. H. Clark, of the Stanolind Oil & Gas Company, formerly with the Midwest Refining Company at Amarillo, Tex., has been on a business tour of the Mid-Continent district.

* * *

W. S. Farish, president of the Humble Oil & Refining Company, Houston, Tex., and Mrs. Farish, have returned to their home from a vacation trip to points in New York and South Carolina.

* * *

Col. G. A. Burrell has returned from Russia to this country, after installing compression plants, absorption plants and pressure distillate stabilizers in the oil fields of Russia for his company, the Burrell-Mase Engineering Company.

* * *

Ralph E. Davis, consulting engineer, Pittsburgh, Pa., is closing his Tulsa office and moving the office files to Pittsburgh. This is done to consolidate his work at the home office, and Clarence J. Knutson, geologist, is moving to Pittsburgh also. E. C. Robbins of the home office is in Tulsa closing up the business there.

* * *

W. B. Haas, former statistical secretary to the president and L. E. Harmon, former auditor of manufacturing have been appointed assistant secretaries of the Standard Oil Company of Indiana with headquarters in Chicago. M. A. McNulty has been appointed auditor of manufacturing and E. H. Vollriede, assistant auditor.

* * *

A. W. Peake, vice president in charge of production for the Standard Oil Company of Indiana, Chicago; R. G. Stewart, president of the Pan American Petroleum & Transport Company, New York; F. O. Prior, president of the Stanolind Oil & Gas Company, Tulsa; and Bruce Johnstone, director of the Standard Oil Company of Indiana, recently concluded a trip to Fort Worth, Tex.

* * *

Paul Ruedemann, geologist, with the Ralph E. Davis Company, Tulsa, has been in Germany and France on consulting work for his company for several months. Mrs. Ruedemann has recently joined him there and they are making a tour of Europe and expect to return to this country about September 1. Mr. Ruedemann will report to the home office in Pittsburgh, Pa., but it is understood that he will later return to Tulsa.

* * *

Frank P. Donoghue, formerly chief petroleum engineer for the Southern Crude Oil Purchasing Company, was elected president of that company at a recent meeting of the directors. Mr. Donoghue succeeds Sheldon Hardin who has held that position for about six years. A. L. Selig, chief geologist, was elected vice president and director, succeeding W. R. Wheeler. T. A. Gill was re-elected secretary-treasurer. A. B. Irion resigned as general superintendent.

Dr. T. Sutton Bowman, who has been in India since the end of last year carrying out geological investigations, returned to London recently.

* * *

Van S. Welch, independent operator of Artesia, N. Mex., will represent New Mexico at the governors' oil conference to be held at Denver on August 10.

* * *

Jack Elliott, former oil and gas district supervisor of the Amarillo district, has been transferred to Tyler, Tex., to assist J. L. Martin, East Texas district supervisor.

* * *

C. S. (Sprigg) Miller, land man for the Tidal Oil Company at Fort Worth, Tex., and Mrs. Miller and Mr. and Mrs. Charles Renaud of Fort Worth, are on a vacation in Monterrey, Mexico. Mr. Renaud is a consulting geologist and independent operator.

Men in the Industry

Leo C. McCloskey

Leo C. McCloskey, recently named to the directorate of Imperial Oil, Ltd., following the retirement of F. J. Wolfe, has been associated with the company since he left school. A native of London, Ontario, Sarnia was his boyhood home; and on leaving school in 1903 he got a job in the Imperial refinery there. The Sarnia plant with 800 barrels a day capacity represented in those days the entire refining activity of Imperial Oil, Ltd., and Mr. McCloskey was destined in the intervening 27 years to see it develop a continent-wide chain of six refineries with 75,000 barrels daily aggregate capacity.

Mr. McCloskey's first job was to nail lids on candle cases. After a few months he became office boy, which brought him into contact with C. O. Stillman, now president of the company, then superintendent of the Sarnia plant. In 1904 young McCloskey was transferred to the cooperage shop, later became a clerk in the refinery office, and then as general timekeeper, returned to the works where he acquired an extensive knowledge of the technical end of refining. After five years in the refinery yard he was again recalled to the office to take charge of records pertaining to costs and processing.

In 1915 Mr. McCloskey was appointed chief accountant. This was on the eve of the great expansion of operations which entailed construction of refineries in Ioco, British Columbia; Regina, Montreal, Dartmouth and Calgary. In 1916 Mr. McCloskey moved to Toronto, with the transfer of the head offices to that city, and in 1923 he was appointed assistant general manager of refineries.

George Sutter, engineer, Frick-Reid Supply Corporation, has returned to Tulsa after several weeks spent in the East Texas Field.

* * *

E. H. Smith of the land department of The Texas Company, Houston, Tex., is spending a two weeks' vacation touring in New Mexico.

* * *

J. L. Shakely, vice president Frick-Reid Supply Corporation, is making an extended trip covering the East Texas and Gulf Coast territories.

* * *

Herschel H. Cooper, president of the San Antonio Geological Society, who was injured by a falling derrick at a well in Lavaca County, Texas, is recovering at a San Antonio hospital.

* * *

H. D. Crawford, sales manager for the Parkersburg Rig & Reel Company, Parkersburg, W. Va., was in Tulsa for a few days last week and left for East Texas oil fields where he will investigate conditions.

* * *

H. S. Clark, district geologist for the Sinclair Oil & Gas Company, at Tyler, Tex., has undergone a major operation at St. Josephs Hospital in Fort Worth, Tex.

* * *

Frank Fox, who returned to England last January, after two years in Australia with the Freney Kimberley Oil Company, has left London to return to his home in California.

* * *

R. D. McClaren, superintendent of the Pure Oil Company plants in Ohio, is spending a vacation in Tulsa and Muskogee, Okla. Mr. McClaren was assistant superintendent of the company's plant at Muskogee before taking over the supervision of the Ohio plants.

* * *

T. A. Stancliff and J. D. Hunter have been appointed deputy oil and gas inspectors of New Mexico. Appointment was made by Dr. E. H. Wells, state geologist. Mr. Stancliff will be in charge of the Hobbs, Eunice and Jal areas, and Mr. Hunter will cover the remainder of the State.

* * *

Kenton Chickering, of Oil City, Pa., has been transferred by the Oil Well Supply Company from the Imperial plant there to the branch at Avenal, Calif., near the Kettleman Hills oil field. He is a graduate of Lehigh University, and a grandson of one of the founders of the Oil Well Supply Company.

* * *

The Skelly Oil Company which has had district offices at Roswell, N. Mex., and San Angelo, Tex., is consolidating these into one office at Midland, Tex., with E. R. Mosby, district land man and Joseph Morero, district geologist, in charge. F. E. Neel, formerly with the company, has accepted a position with Laughlin and Simmons of Tulsa, and will remain at San Angelo with that company.

* * *

C. E. Olmsted, vice president and general manager of The Texas Company (California) has announced the appointment of Torrey H. Webb, formerly chief of lands and leases division of that company, as assistant to vice president and general manager. James T. Wood, Jr., succeeding Mr. Webb as chief of the lands and leases division. Mr. Webb is a native Californian, was graduated from the Columbia University School of Mines, and has been associated with the group now comprising The Texas Company (California) since 1922, at which time he was in the service of the Ventura Consolidated Oil Fields, which company was subsequently acquired by the California Petroleum Corporation, which in turn was purchased by The Texas Company (California) in 1928. Mr. Wood is a graduate of Stanford University and has had wide experience as a geologist and petroleum engineer with General Petroleum, Honolulu Consolidated Oil Company and Associated Oil Company, having entered the service of The Texas Company as assistant chief geologist in 1929.

In

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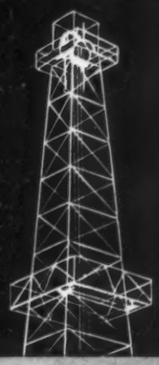

A New DEEP

GAS INJECTION PUMPS

Optional equipment on the Type GAU gas engine illustrated here. Field reports and plant tests show that Injection Pumps reduce low fuel consumption still lower to approximately a 4-cycle level.

OIL FUELED HEADS

Standard equipment on Type GAU oil fuel engines — or obtainable separately for quick conversion of Type GAU gas engines where gas supply runs low.

EFFICIENT POWER CYLINDERS

These contribute greatly to reserve power and smooth, economical operation. Large exhaust ports have broad, water-cooled bridges. Inlet ports are large. Ample water-jacket spaces insure effective cooling throughout.

RATED 75 B.H.P. AT 225 R.P.M.

TYPE

WHEREVER oil is produced from greater and greater depths, there's a constant call for engines with higher power, increased ruggedness and stricter economy. Type GAU is specially engineered for this kind of duty — pumping, swabbing, pulling rods and cleaning out. Its design was developed in conjunction with leading oil company engineers thoroughly versed in deep-hole

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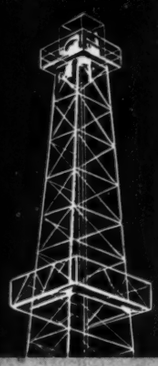

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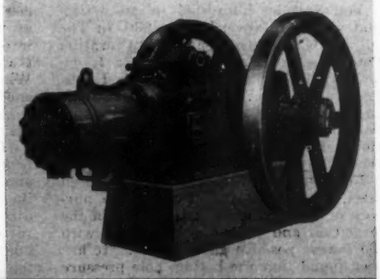

production needs. Its construction includes many standard 2-cycle Cooper-Bessemer parts, distinguished everywhere for satisfactory service. A new Bulletin explains the long life; the ease of starting, control, inspection, adjustment, fuel-conversion; the surplus power and rapid pick-up. *Request this Bulletin today.*

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BRANCH OFFICES IN ALL PRINCIPAL OIL FIELDS

Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

WELL PUZZLES HIM

We note in your issue of June 25, 1931, that in a well of the Midwest Refining Co. in the Hobbs Pool the 8⅝-inch casing was cemented at 4,186 feet and the well would not produce through the casing, but later when they ran 2½-inch tubing the well produced 1,523 bbls. of oil and 1,230,000 feet of gas daily through the tubing. I would like to know why the well would produce through the 2½-inch tubing and not through the 8⅝-inch casing. Was the tubing merely hung in the well or was a packer attached and set at the bottom of it? Did the well flow by itself or did it have to be started mechanically? If the latter how? We have a well similar to this one. We have inserted a 2½-inch pump in the sand. It pumps 40 strokes per minute and has a lift of 2 feet per stroke. The pump would have an actual capacity of seven hundred twenty 40-gallon barrels per day, yet the output from this pump is between 1,800 and 2,000 bbls. Hence the well must be flowing the difference.—J. L. P.

You will be interested in an article that appeared November 6, 1930, in The Oil and Gas Journal entitled, "Proration Potentials are Hard to Secure." It describes methods followed in the Hobbs Pool. In the April 23, 1931, issue is another article covering "Engineering Committee Reports on Operations in Hobbs Pool," giving further information about that field.

In Hobbs Pool the wells have been tubed as soon as drilled in for the purpose of conserving the gas energy in the formation and producing the wells with the lowest possible gas-oil ratio. It has been found that the bottom hole pressure in the formation from which oil and gas are produced in that field is about 1,500 pounds per square inch. The depth of wells is from 4,000 to 4,200 feet.

This bottom hole pressure indicates the relative amount of energy available for moving the oil to the hole and to the surface. In trying to flow the well through the 8⅝-inch casing it is obvious that it would be necessary to move a greater volume of oil than it would be necessary to flow through the 2½-inch tubing and because of this condition it was possible to get the well to flow naturally through the tubing when it would not flow through the casing. The wells are not swabbed through tubing.

In an article presented before the A. P.I. meeting in Chicago last November Mercer Parks of the Humble Oil & Refining Co. stated: "The use of tubing as a flow string has generally been accepted as good practice in producing flowing wells, but there has been no great amount of definite information on advantages of using tubing as against flowing through the casing. In this connection the results obtained in the Yates oil field and reported by H. H. Hardison in collaboration with the Yates Field Engineering Committee before the fall meeting of the southwestern district, American Petroleum Institute Division of Production, Galveston, Tex., September 4, 1930, are worthy of mention." The report is published in The Oil and Gas Journal of September 4, 1930, under the head "Effect of Tubing Flowing Wells."

In connection with this general problem it is well to remember that the work of lifting this oil from the formation to the top of the hole may be expressed as load times speed giving foot-pounds of work and this divided by 33,000 foot-pounds would give horsepower.

WHY WAS IT CALLED THAT?

CLOSED-IN PRESSURE

The term "closed-in pressure," which really is self-defining, is applied to the maximum gauge pressure registered at the casinghead when a well has been shut down for an extended length of time. If there is oil or water in the hole when the closed-in pressure is taken the indicated pressure will be lower than the potential rock pressure, the pressure which exists in the producing formation.

The speed is variable and in the large casing with the greater volume of oil per foot of length of column it is not possible to make the well flow naturally because the energy available at the bottom of the hole is used up before the top of the casing is reached.

On the other hand with the 2½-inch tubing string a much smaller volume of oil is handled. It moves at a higher velocity and the well therefore produces naturally.

In the case of your well where you are pumping at the rate of 40 strokes per minute with 2-foot strokes you undoubtedly are agitating the oil and gas at the bottom of the hole and drawing into the tubing a mixture that is lighter than the normal fluid column would be. When this condition has been set up the energy at the bottom of the hole will assist the pump and therefore more fluid is produced than the pump capacity.

However, it seems likely that the same results could be accomplished if a slower pumping speed were maintained, for with the high number of reversals per minute and the short stroke your traveling valve in the working barrel is not having much time to complete its travel from top to bottom and reverse. By slowing down the pumping speed you would reduce strains and stresses on the rods, tubing and pumping equipment and get the same results so far as production is concerned. It would be worth trying.

KEEPING PIPE LINE ACCOUNTS

I wish you would give me some information regarding the system of keeping accounts in a field office during the construction of a pipe line. The kind of office I mean would handle pay rolls, buy various materials and camp supplies, keep an account of the field costs and so on.—E. E. D.

Field offices such as you describe are located at intervals along the pipe line under construction, often in towns of fair size, and they maintain a field organization equipped to transact any business which may come up. C. A. Reynolds, certified public accountant, familiar with this class of work, provides the following information:

"Each field office will maintain the following accounting records: Cash receipts and cash disbursements record, voucher record, equipment record, pay roll record and labor distribution and general ledger.

"All records, except the general ledger, are prepared in duplicate, and the original records together with canceled checks, vouchers and other supporting data are sent to the home office twice a month. All accounts are closed into the main office except cash accounts, accounts payable and the home office account.

"As the majority of the material required to construct the line is purchased by the main office, the only costs which appear on the field office books will be freight, labor and miscellaneous supplies which are purchased by the field offices. On a large-size line, the field offices may be responsible for the expenditure of $2,000,000 within a period of two or three months. The larger part of this money will be spent for labor, and this expenditure, together with the necessity of obtaining accurate labor costs, requires a very efficient time-keeping department and very careful supervision. A timekeeper is placed in each camp with sufficient assistants to enable him to properly check the time of the men, which must be done while they are out on the line; also see that proper deductions are made for men who are eating meals in camp; and constantly be on the alert to help account for the material or equipment of the company which may be in camp or scattered along the line.

"The men working on the line are scattered over such a wide area that the timekeeper and his checkers must be careful to see that the men are actually working each day and each hour and also as to what they are doing. The labor turnover is very large and the timekeeper does not get acquainted with all the men and various subterfuges sometimes are used to get more money than is actually earned. The time for each man will be recorded in a daily time book and each day a cost sheet is made up which shows the cost each day per foot for various operations which is accumulated until the section is finished.

"At the end of two weeks' period, the timekeeper makes his pay roll, which he sends to the branch office together with labor distribution for the period. The pay roll is carefully checked in the field office and men are paid at the camp by representatives from the field offices assisted by the timekeepers. Any discrepancies between the amounts due the men per pay roll and the amount claimed by the men must be thoroughly investigated as well as pay roll checks which are unclaimed.

"Men who are discharged or who quit between pay periods are given pay-off slips with a record of their time, which is to be presented to field office, but in some cases arrangements are made with banks to cash these pay-off slips, especially when the field offices are a considerable distance from camp.

"The principal classifications required to record labor costs properly are as follows: Hauling and string pipe, couplers and paint, clearing right of way, machine ditching, hand ditching, laying pipe, welding pipe, painting pipe, refill ditch, camp expense and engineering and supervision."

LOWERING MAINTENANCE COST

In your discussion of oil-field boiler insulation in The Oil and Gas Journal of June 18 you mentioned reduced cost of maintenance as one of the advantages of insulating boilers. It is not clear to me how this would lower maintenance cost to any appreciable degree. I would appreciate further information on this point with regard to both boilers and steam lines.—D. L. F.

W. H. Meier, of the Atlantic Oil Producing Co., who was quoted in the discussion to which you refer, says in reply to your question:

"Insulation on boilers is not recommended as a substitute for a boiler house but is recommended as a means of conserving heat and reducing steam plant investment and maintenance costs. A waterproof coating applied directly over the insulation hard-finish coat will add considerably to the durability of the insulation. This should always be used on drilling boilers and other installations that are usually exposed to the weather. The above cost of each type of insulation includes the covering for steam lines and fittings in a boiler battery but does not provide for covering steam lines beyond the boiler house.

"Steam lines should be covered with standard 1-inch thick, 85 per cent magnesia sectional pipe covering. Fittings and flanges should have a covering of equal thickness, composed of long fiber asbestos cement and canvas outside cover. All lines exposed to the weather should have an additional protection of a three-ply roofing jacket wired on with No. 16 gauge galvanized iron wire and the fittings and flanges should be covered with one-quarter-inch emulsified asphalt coating. The costs per foot of outside pipe insulated and weatherproofed as outlined, are approximately as follows: 4-inch pipe, 80 cents per foot; 3-inch pipe, 65 cents per foot and 2-inch pipe, 45 cents per foot.

"It is important to remember that the heat loss from a few hundred feet of steam line is equivalent to that from the entire surface of a boiler; also the hotter the steam the greater its power.

"Regardless of which material is used, oil field boilers and steam lines should always be insulated.

"To cite an example: Four 70-horsepower boilers uninsulated were each consuming 35 bbls. of crude oil per day and were not delivering sufficient steam to operate the lease properly. They were insulated in three days with block magnesia and asbestos. After insulating the fuel consumption was reduced to 20 bbls. of oil per boiler, and although the weather was much more severe and colder, three boilers carried the load very easily. The cost of $840 for insulating was saved in less than one week.

"In another case four 75-horsepower boilers uninsulated and fired with natural gas could not furnish sufficient steam, and due to heavy firing were constantly giving flue and staybolt trouble. The records indicated maintenance and repairs of almost $160 per month for each boiler. A request was made to install an additional boiler. Instead, the four boilers were insulated with block magnesia and asbestos and three boilers were then able to handle the load, which had somewhat increased, and the $160 per month maintenance expense was practically stopped."

RIGIDITY

As though held in a Giant's grasp, the steady, even stroke of a Parkersburg Walking Beam is a result of rigidity. Its construction of special steel section, with welded reinforcements, assures strength and efficient performance for any drilling or pumping service.

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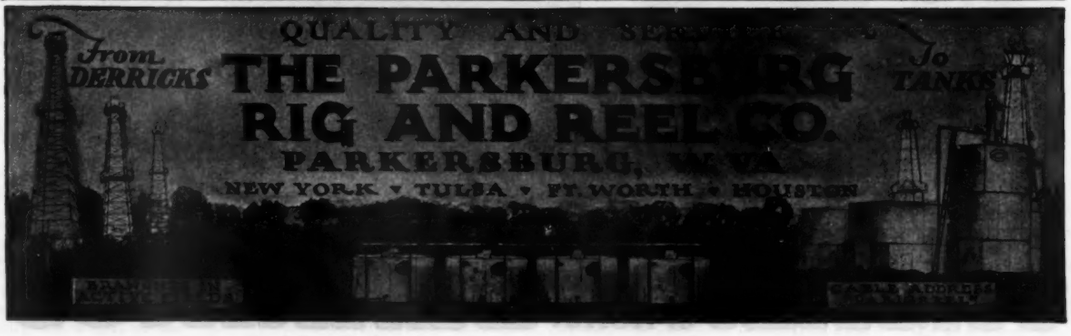


345-A

TIMKEN has 30 Bearings on the Doheny Stone "Hydril." The manufacturer says: "We started using Timken Bearings in diamond drill equipment many years ago, so it was natural for us to Timkenize our difficult bearing applications when we designed our first rotary and draw works in 1920." More Timken Bearings are used in the oil fields than any other type of anti-friction bearing. Specify Timken-equipped.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

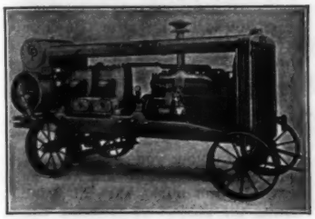
TIMKEN *Tapered Roller* **BEARINGS**

Oil Industry Equipment and Supplies

NEWEST CP COMPRESSOR HAS 6-CYLINDER ENGINE

In the latest addition to the line of portable compressors made by the Chicago Pneumatic Tool Co., New York, a four-cylinder-in-line compressor has been combined with a six-cylinder heavy-duty Hercules motor to produce a unit of exceptional smoothness, reliability and economy.

The advantages of multicylinder design, long since demonstrated in the automotive industry, are named as including



excellent balance, small stresses in the reciprocating parts and absence of vibration, all making for a long, useful life with minimum maintenance expense. While the application of multicylinder design to portable compressors is no longer new, the employment in the compressor of an accurately counterbalanced crankshaft, with quartered cranks, and the use of a six-cylinder engine are said to have developed the foregoing advantages to a higher degree.

The outstanding features of design of the new CP compressor are enumerated by the manufacturer as follows: Absence of vibration, full force-feed lubrication of compressor and engine, six-cylinder engine, direct drive through quick detachable flexible coupling, counterweights forged integrally with compressor crankshaft, full floating piston pins in compressor, cylinders cast separately from crankcase, large compressor crankcase doors affording complete accessibility to bearings, sectionalized radiator with steel protection bars and fan guard, one-piece cast steel deck.

HILLS-McCANNA TENSIOMETER

The Hills-McCanna Tensiometer, manufactured by the Hills-McCanna Co., Chicago, is designed to show quickly and accurately the tension on wires, cables and lines. It is built for service in the field. Its heavy aluminum case, and all exposed parts, are chromium plated or made of stainless steel. The weight is only 14 pounds; the overall dimension, 2½ feet, which makes for easy handling and use in many positions and places. The standard model will test all wires and ropes up to 1 inch in diameter and has a tension capacity of 16,000 pounds. Larger capacity meters and meters for special shaped stream line airplane cables can be supplied. The instrument is unusually sensitive and is said to register the slightest change of tension while in place. This accuracy also permits its use for weighing. In the petroleum industry it is used for determining the pull on a cable when the drill is stuck, and preventing a greater pull being exerted on the cable than is safe. The meter is also used for fishing and to record graphically the weight of the drill at all times.

The Fusion Welding Corp., Chicago, has appointed the Puritan Compressed Gas Corp. of Kansas City, Mo., as distributor for the Weldite line of welding rods. The territory served by Puritan will include Kansas and western Missouri.

NOTES ABOUT TRADE LITERATURE

"Autocars for Hauling Oil" is the title of an attractively printed 24-page booklet prepared by the Autocar Co., Ardmore, Pa., with a view of indicating the wide use of its product in the oil industry.

The Chapman Valve Manufacturing Co., Indian Orchard, Mass., has issued a bulletin announcing its new line of forged-steel globe, angle and check valves.

The Wagner Electric Corp., St. Louis, Mo., has issued a new bulletin on the subject of Wagner brake service for large and small operators of trucks, trailers, buses, pleasure cars, taxicabs, etc.

The Carrick Engineering Co., 431 South Dearborn Street, Chicago, announces a four-page bulletin, "Carrick Stiff-Arm Fittings."

An eight-page bulletin, with points arranged for easy reference, is being mailed by the Cooper-Bessemer Corp., Mount Vernon, Ohio, to those interested in compact four-cycle gas engine driven compressor units of 400 brake horsepower.

The American Cast Iron Pipe Co., Birmingham, Ala., announces a new catalog devoted to its Mono-cast Doublex Simplex pipe. The catalog contains 48 pages, profusely illustrated.

The current number of the Water Tower, published by the Chicago Bridge & Iron Works and the Horton Steel Works, Ltd., Chicago, contains illustrations of designs offered in an elevated tank competition. The first-prize design, by Eugene Voita, of Chicago, forms the cover page.

The Chicago Pump Co., Chicago, says it is about to distribute a catalog on the "Condo-Vac" vacuum pump that will remove the mystery and confusion from the production of vacuum by means of a pump. It is to contain a wash drawing in four colors of the interior of the "Condo-Vac" pump showing the course of the air, condensate and water through it.

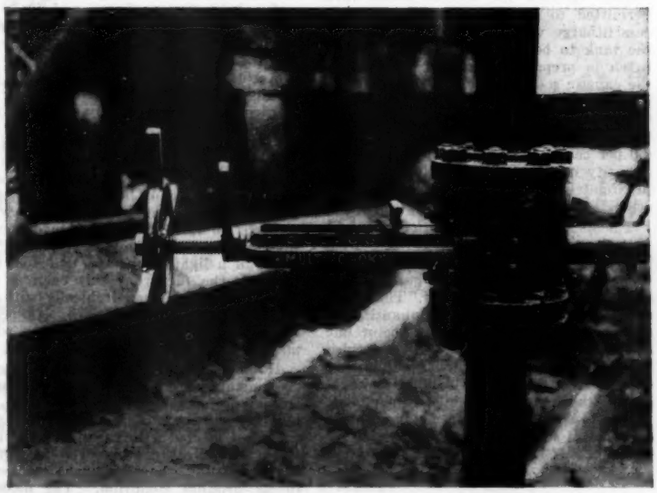
The current number of Oxy-Acetylene Tips, published by the Linde Air Products Co., New York, contains an interesting article on grounding gas lines.

A 28-page booklet published by the Medusa Portland Cement Co., Cleveland, Ohio, describes characteristics of Medusa waterproofed Portland cement.

Recent developments in the theory, design and manufacture of heat exchangers and research on the heat-transfer coefficients for petroleum oils and other fluids are the subject of a 106-page bulletin published by the Ross Heater & Manufacturing Co., Inc., Buffalo, N. Y.

A new bulletin, superseding preceding ones relating to "Falcon" continuous electric furnaces for heat-treating strip metal and wire, has been issued by H. O. Swoboda, Inc., Pittsburgh, Pa.

GULFCO CHOKE VALVE OPERATES ON NOVEL PRINCIPLE



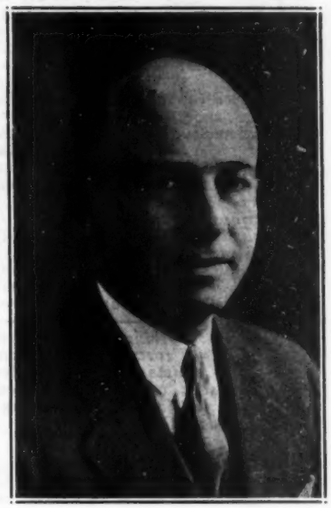
The Gulf Coast Machine & Supply Co. of Beaumont and Houston, Tex, announces production and delivery on its new choke valve, named the Gulfco Multichoke, designed on a new principle. The chokes are cartridges which are changed with almost the speed that cartridges are ejected from a repeating rifle. Each choke has five holes. Four turns of the hand wheel is all that is necessary to change from one opening to another, a matter of a few seconds.

With this choke it is unnecessary to close the flow line gates to change the opening in the choke. This method eliminates connecting gang work in making the change. Nothing has to be removed from the line. Two other factors contributing to the low cost of upkeep are the number of openings in the hard steel of each of the cartridges and the inexpensiveness of replacing cartridges.

Cartridges can be pushed through and retracted as well, hence cutting out of chokes can be detected promptly. Cartridges are furnished with any desired orifice up to 1 inch, either graduated in fractions or series of uniform size holes. The body is of rugged construction and made of heat-treated chrome-nickel steel. The valve is furnished with flanges bolted on. There is a bronze ring gasket between flanges which eliminates additional flange unions in line.

MEN KNOWN *in* THE EQUIPMENT FIELD

M. H. Kotzebue, vice president and general manager of the Tulsa Boiler & Machine Co., first entered the service of that organization in 1915, the year following his graduation in mechanical en-



M. H. Kotzebue

gineering from Texas A. & M. College. He resigned in April, 1917, to enlist in the aviation section of the United States Army. After his discharge in January, 1919, he was employed by the Mount Cooper Boiler & Iron Co. and the California Research Laboratories and he was associated with Roger Kemp in the development of kerosene burners. In 1923 he returned to the Tulsa Boiler & Machine Co., where he has been continuously since.

Since 1916, when he patented a vapor-phase cracking process, Mr. Kotzebue has specialized in designing and building refinery and natural gasoline equipment. Among his latest oil-industry inventions are a steam condenser and feed-water heater and an internal temperature regulator for bubble towers.

Mr. Kotzebue was born in Moulton, Tex., in 1893. He is a member of the American Society of Mechanical Engineers, National Aeronautical Association and the Tulsa Club. He is a Shriner and he is president of the Natural Gasoline Supply Men's Association. His residence is in Tulsa. His hobby is flying and he has a private plane in which to visit oil fields served by his company.

AETNA ROLLER BEARINGS

A complete line of roller bearings has been brought out by the Aetna Ball Bearing Manufacturing Co., Chicago, for service where heavy loads and sudden shocks are to be carried. This consists of the CR-200, CR-300 and CR-400 series for light, medium and heavy duty, comprising 64 bearings ranging from 1⅞ to 10⅞-inch outside diameter. These bearings are standardized and interchangeable with other makes and types of bearings as to inside and outside diameters; and are interchangeable with S.A.E. standard ball bearings. They are said to have great load-carrying capacity, low friction, quiet running characteristics and occupy minimum space for a given load.

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

ROAD OIL AND BLACK OIL

Will you please advise us whether or not summer and winter black oils are suitable for road-making purposes as well as cold patching worn spots? The summer oil has a flash of 370° F. and viscosity at 210° F. is around 100 seconds; the winter oil has about the same specifications but with a 15° cold test.—W. A. W.

The quality of a good road oil depends to a large extent upon the asphaltic content, commonly measured in terms of percentage residue of 100 penetration. This is determined by means of a penetrometer, which indicates the penetration of needle of standard size under a weight of 100 grams in five seconds at 77° F. Another important specification for road oils is the total bitumen as shown by the solubility in carbon bisulphide; usually 99.5 per cent being required.

In the absence of a complete description, black oil is the term applied to the black residue obtained when a paraffin oil is reduced. As originally used it was an oil free from asphalt, but the term is now loosely applied to the thick dark oil used for the lubrication of heavy machinery, such as car journals, gears, axles, crushers, etc., and may contain asphalt.

It is clear that if a black oil is of high quality for use as a lubricant that it would not be suited for use as a road oil.

There are numerous grades of road oil. It is important that the oil will not evaporate rapidly under atmospheric conditions; it should spread well, and must act as a binder. Road oil is expected to be both a dust preventive and a road preservative.

Proper preparation of the road bed has much to do with the successful use of road oil; many failures have been charged to the oil that were due to poor condition of the road. When making an oiled road the surface should be free from dust. The dust is drawn to the side before applying the oil and then brought back in sufficient quantities to just absorb the oil. An important factor is the crowning, as a high crown will permit a rapid run-off and the resulting wash. A crown of three-fourths to 1 inch per foot is recommended.

A specimen specification for a road oil follows:

Gravity, 14/20.

Viscosity at 210°, 100 or more.

Solubility in carbon tetrachloride, 99 per cent.

Heating loss at 325° F. for five hours, under 15 per cent.

Water, none.

MAKING AND USING DOCTOR SOLUTION

What is the percentage of the ingredients for making doctor solution and what is the quantity to use per barrel when sweetening?—H. W. H.

Doctor solution, as prepared for test purposes, is made from pure sodium hydroxide and litharge. About 125 grams of NaOH are dissolved in distilled water, 60 to 70 grams of litharge added, and the mixture made up to one liter with distilled water. Shake this several times a day and let stand over night before using. Decant off the clear liquid or remove small portions by means of a syphon. Keep the mouth of the bottle covered with an inverted glass.

Approximately equal quantities of the doctor solution and gasoline are used for the test. Shake these vigorously, usually a 4-ounce oil sample bottle stopper with a clean cork is used, for a few seconds, then add a pinch of powdered sulphur (flowers of sulphur). No precipitate or pronounced color should form in the sample or between the two liquids.

When making up large scale doctor solution it is the practice to dissolve caustic soda in water, usually assisted with some steam, and then saturate this solution with litharge. The litharge being added in excess and the solution thoroughly agitated for several hours then permitted to clear by settling. The excess litharge will settle to the bottom of the tank to be drawn on when the next batch is prepared. The concentration of the caustic soda solution used appears to vary with different treaters, variations from 10° to 20° Baume solutions having been noted; this is equivalent to from 6.5 per cent to 14.3 per cent NaOH. The quantity of litharge in a solution of approximately 14° Baume is close to 3 per cent.

The quantity of this solution required for adequate sweetening will vary with the character of the crude oil refined and the process by which the gasoline, or light oil, has been obtained. The same may be said regarding the quantity of sulphur required to break the doctor but it must be used with caution, otherwise there will be danger of over sulphuring the product. Sulphur is soluble in gasoline to the extent of about 0.4 per cent, while the specification for motor gasoline limits total sulphur to 0.1 per cent.

LOSS WHEN STORING AND DISBURSING GASOLINE

A company gasoline disbursing pump for company-owned cars shows a loss probably because not allowing for enough evaporation. The gasoline is delivered in drums from a vacuum station to a warehouse where it is held until needed, and then transferred to a buried tank. The gravity of the gasoline is 65 A.P.I. Under these conditions what is a fair estimate of shrinkage I may expect per month?—L. G. I.

Several years ago the Bureau of Mines made an investigation of breathing losses of petroleum from vapor-tight tanks under various conditions and while these tests were made in the field and concerned with 37.5 A.P.I. petroleum, it may be that the conclusions derived from the investigation will be of interest. This work is reported in R.I. No. 2,834, by Ludwig Schmidt. "Observations were made over a period of 36 days during January and February, with an average temperature of 46° F. The total volumetric loss for the tank equipped with 2-ounce pressure relief valve was 1.4 per cent, with a gravity loss of 0.55° A.P.I. The total volumetric loss for the tank equipped with the 16-ounce relief valve was 0.59 per cent, with a gravity loss of 0.3° A.P.I." The temperatures noted here were low, so larger losses may be expected under the same storage conditions during the summer months.

Reports from the large modern refineries indicate an over-all loss of around 3 per cent of the crude oil charged. Plants of moderate size, say 10,000 bbls. daily capacity, usually operate with a total loss of 5 to 7 per cent. Refinery tanks, above ground, show a loss of about one-half of 1 per cent.

These general figures show the tendency. When a gasoline of low vapor tension is stored under ground and handled from this storage there should be no loss. A survey of service station reports suggests that the ordinary handling loss varies between nothing and 1 per cent: anything above 1 per cent is, according to several companies, subject to investigation.

It may be in the case mentioned any large loss could be located in the drums and a loss while in the storehouse.

LUB OIL GASOLINE RATIO AND QUALITY USED OIL

What is considered to be the consumption of lubricating oil based on the sale of gasoline and lubricating oil at service stations, either as a ratio or on a percentage basis? Is the quality of lub oil reduced in the crankcase and is it advisable to drain off used oil before adding fresh oil?—G. F. E.

According to the national surveys, the service stations show normal sales of lubricating oil to be between 2.25 and 2.50 per cent of the gasoline sales, or about 2.5 gallons of lubricating oil to each 100 gallons of gasoline.

There has been considerable discussion over the quality of lubricating oil after it is poured into the crankcase and what happens to it after the car is driven a few miles. The customer seems to approve of a light colored oil and does not consider the fact that this color is instantly changed when it blends with an oil that has been in service. Color of itself is of no value as indicating what may be expected of a lubricating oil.

It is well known that under ordinary circumstances a lubricating oil made from petroleum does not decompose. It may become contaminated with dust and water, or diluted with gasoline, but when these substances are removed by filtering or settling, the oil may be recovered in its original condition. The modern automobile is equipped to maintain the purity of the lubricating oil; the solid material that does not settle out is removed by filtering. The dilution becomes fixed after a short time so that any lubricating oil in the crankcase reaches a uniform composition.

It is not necessary to frequently drain off the oil from the crankcase before adding fresh oil, in fact some authorities are of the opinion that lubricating conditions are improved by the presence of some of the old oil. According to a report of A. C. Aston, Washington, D. C., to the Society of Automotive Engineers, quoted by Science Service, draining oil does not remove coarse material in the crankcase. Mr. Aston believes draining removes oil which has been used so long in the engine that it has found its proper balance and become perfectly stabilized. It is discolored, that is true, but the discoloration is not in the slightest harmful, according to Mr. Aston, because it is merely the result of smoke which has found its way past the pistons. An engine operates worse on new oil. For oil, it is said, gains efficiency with practice, and after a few thousand miles the flash and fire points and viscosity become stabilized to suit the engine.

Used oil is better during temperature changes, the report states. It has the proper consistency, and in winter when the engine is hard to start, it circulates easier and causes less strain than new oil.

REDUCING COLD TEST OF FUEL OILS

I should thank you very much if you would give references as well as the knowledge you might have at hand concerning the subject of lowering the cold test on high cold test fuel oils or any information pertaining to this subject.—C. A. C.

The temperature at which any liquid will become solid is related to chemical composition. The substance of most importance in the petroleum liquids is paraffin wax; when the percentage of wax in any oil is decreased there is a reduction in the pourpoint and cold test temperatures.

A few substances, when added to a high pourpoint oil, have a tendency to lower the pourpoint. Examples of these are degras and asphaltic material. Such additions are not good practice, usually being looked upon as a form of adulteration. Degras has been used in greases and compounded lubricating oils, but there are no records of the intentional addition of it to fuel oil. Degras is a fat extracted from wool washings and it is also obtained as a by-product in the manufacture of leather. It has an unpleasant odor which enables one to detect the presence of even small quantities by burning a portion of any oil or grease that may contain it. It has been noted that the addition of an asphaltic oil to a high cold test oil will cause a lowering of the pourpoint. There appears to be no serious objection to this practice if it is desired to lower the pourpoint of a fuel oil.

The market price of fuel oil is now so low that it would hardly pay to attempt to lower the pourpoint by treatment of the fuel oil. The substances appearing to have some merit as wax removers are expensive consequently any process involving their use would have to be operated at the refinery where a commercial operation might be secured at the lowest cost.

Several articles have been published in the Ind. Eng. Chem. describing investigations relating to solvents for wax in lubricating oils. These articles are to be found in Vol. 21, 1098, 1929; and Vol. 23, 170, 1931. J. W. Pool has directed this work. The base oil was a Pennsylvania oil to which 122° F. melting point wax was added. The solvents used included a large number of organic substances, qualitative results being noted for some and quantitative data were collected for several of the more promising ones. Naphtha is a good solvent for paraffin wax but the degree of solubility is too high to make use of it in any oil-wax separating process. The wax temperature solubility curve of turpentine is very similar to the naphtha curve. Ethylene dichloride has a high attraction for the oil.

July 30!

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Testing Rates of Solution of Oil and Gas

Conclusion of Report of Progress on A.P.I. Research Projects on Solubility, Viscosity and Surface Tension

By William N. Lacey
California Institute of Technology, Pasadena, Calif.*

[The first installment of Mr. Lacey's article was published in The Oil and Gas Journal of July 9, pages 15-118-119. This is the concluding installment.]

Question: How do you determine the area there?

Mr. Lacey: At the start of a run, if the sand is completely filled with liquid so that the liquid comes just to the top of the sand, as the dissolving process goes on there will be an increase in liquid volume; and, as a result, there will be a certain amount of free liquid on top of the sand. There is another alternative. You can start your liquid a little below the sand and let it come up. We know approximately the amount of gas and what the change in volume will be, so we can anticipate the change by starting just a little below and letting the liquid come up to the surface. We have tried both ways, and believe it makes very little difference which is used. The speed of the process is probably limited by the sand zones rather than the liquid above it.

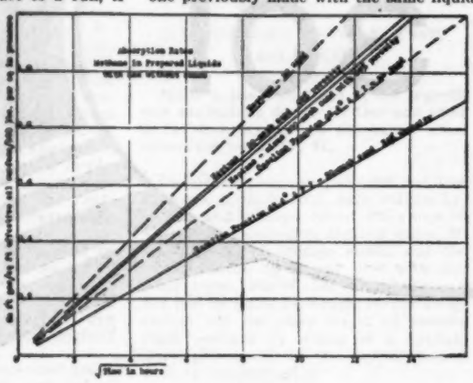

Figure 11.

Question: Suppose your liquid is so it doesn't reach the surface of your sand; would that affect the results?

Mr. Lacey: I think if it still remained below, it would not affect it appreciably. Of course, in our work the rise of the liquid above the top of the sand is rather small, but the fact that our constants did not change as the process went on indicates that there was no appreciable effect.

Question: In your calculations of your tube, say 1 square foot, would you use 1 square foot in each case, or would you adjust it for your porosity?

Mr. Lacey: We actually use the same total surface in all cases, but we calculated what the rate would have been for an effective surface of 1 square foot. That is, the results were brought together by calculations rather than by trying actually to get the amount of effective surface which would correspond with that of the pure liquid itself. We measured the actual volume of the pore spaces, then divided that volume by the total depth, and so obtained the area of the effective liquid cross section.

Figure 12 shows one run which we made very recently, and which was made possible by the very kind co-operation of the Standard Gasoline Co., who, at the expense of several months' work, and, I think, several hundred dollars' outlay, made for us something like 25 cubic feet of ethane gas, which was somewhat over 98 per cent pure.

This run made with pure liquid cyclohexane is shown, compared to a similar one previously made with the same liquid but with methane gas, to indicate the effect of the composition of the gas. The composition of the gas is, apparently, of major importance. One reason that the ethane rate is higher is because of the fact that it is very much more soluble than methane and, therefore, a much greater concentration gradient results to help diffusion of the molecules in the liquid. As a matter of fact, when you bring these results back to absolute diffusion constants, you find a somewhat different situation. The actual amount of gas dissolving is much more; but when you consider the quantity of gas which must dissolve to reach saturation, you find that the percentage saturation reached in a given time is really not so different.

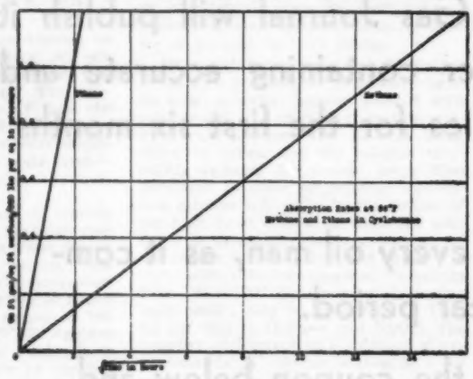

Figure 12.

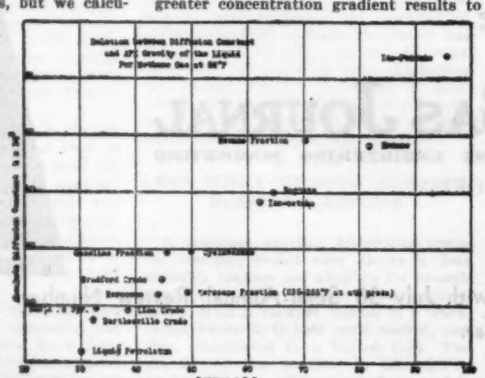

Figure 13.

Figure 13 shows the absolute diffusion constant, the constant K in the equations shown in Figure 3, plotted against the A.P.I. gravity of the liquids used. You can see that, for some reason—I won't guarantee to give you the reason—these points do fall in a rather orderly arrangement in correlation with A.P.I. gravity. I do not believe that is a real correlation. I do not see why density should be the controlling factor. It is much more likely some other factor, which we do not determine, is the true correlating property and very nearly parallels the A.P.I. gravity. The plot, at least, serves to give a summary of our results. If asked to make a "first guess" at the diffusion rate of methane in a given liquid, I would use this plot to determine it, but would not guarantee accuracy.

Question: Have you tried to correlate rates with the molecular weights of the liquids?

Mr. Lacey: We have felt that the determination of average molecular weights of these somewhat impure liquids would be off our track, and so have no figures for such correlation. We have not felt, up to the present time, that we have enough data to indulge in statistical work.

There is one more figure (Figure 14) which I thought might bring these data back to a more practical basis for visualization. We have taken the case of heptane in a 20-mesh sand of 45 per cent porosity, and have calculated the time required to half saturate a 10-foot depth of liquid with methane gas above it; that is, we have assumed a 10-foot depth of liquid which contained no dissolved gas, and brought gas above it at an increased pressure and let it diffuse into the liquid until it was 50 per cent saturated. It must be remembered in this connection that the first half of the gas dissolves much more rapidly than the latter half. This calculation tells us that at the end of about nine years this 10-foot depth of heptane in 20-mesh sand would be approximately 50 per cent saturated. The other cases shown tell a similar story. The last case only is not based on experimental results. We have made no determinations thus far involving crudes in sands. To calculate the results for this last graph we have assumed that the diffusion constant for this crude in a sand would be reduced by the same proportion of its value without sand as was found to be the case for heptane with and without the same sand. It probably gives us the order of magnitude, at least.

There are several other phases of our work which I will try to run through very rapidly.

The solubility work which has been carried on has also been carried on from the viewpoint of repressuring. We have about 14 crude oil samples from various parts of the country. We have been working on the study of solubility of certain natural gases in these crudes. Our problem is to determine the amounts of these gases which can be dissolved in these crudes under a variety of conditions of temperature and pressure. We, therefore, carry the process on by dissolving rather than by separation from solutions previously prepared.

Bruce H. Sage has been responsible for the development of our method. Our process is a relatively simple one. In this case our work is carried to pressures approximating 2,500 pounds per square inch instead of lower pressures, and it became necessary to take our gas samples and actually compress them to the pressures we wanted.

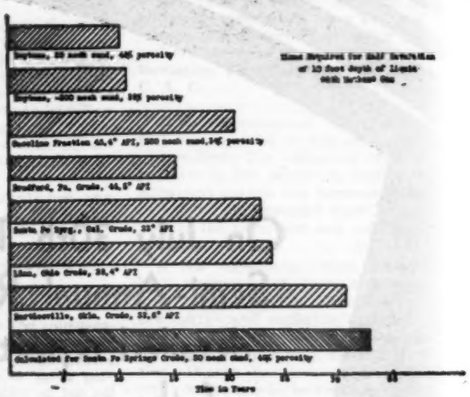

Figure 14.

Our gas samples come in through a measuring reservoir system of exactly the same principle as was used in the rate work, except that we must have a greater volume in the system than that of our gauge. The gas is withdrawn from the reservoir system, the amount let out being determined from our gauge reading.

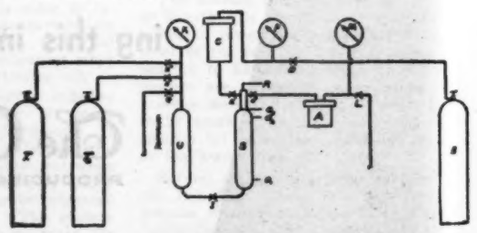

Figure 15.

It passes into a mercury displacement pump, shown in Figure 15. It consists of a steel U-tube in which we have mercury. The gas sample of known volume is then compressed and pushed over into a saturation cell. This has a known volume of liquid in it, and the cell is agitated to bring about saturation. We are now concerned with equilibrium, and not with rates. The pressure is measured by a test gauge which we have accurately calibrated and checked at regular intervals. We have two cylinders of high-pressure air from our liquid air machine

(Continued on Page 113)

*Before Dallas meeting of American Petroleum Institute, June 2.

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Natural Gas Industry Developments

LOS ANGELES SUPPLY BELOW PEAK OF DEMAND

LOS ANGELES, Calif., July 11.—Stringing of pipe through Cahuenga Pass by contractors building the 26-inch gas line from Kettleman Hills to Los Angeles for the Southern Fuel Co., affords considerable food for reflection as to the probable supply of gas in Los Angeles during the coming fall and winter. It is altogether probable that if the new line were not available to supply this city with gas from Kettleman Hills, the city of Los Angeles, in the heart of many of the biggest oil fields in the world, would be short of gas next winter.

The decline of gas pressure in oil wells of the Los Angeles Basin in recent months has been so marked that the gas output of the basin today is less than the peak gas consumption of Los Angeles last winter. Some of the wells in the basin could be opened to provide more gas, but there is room for still further decline of pressure between now and winter, and there also is the state law which limits the outlet of gas to 10,000 feet per barrel of oil. Under oil curtailment the gas output of the Los Angeles Basin apparently has to stay down, even if natural decline does not automatically reduce the volume.

This new line, which is being built under joint sponsorship of the Southern California and Southern Counties Gas Companies, runs from Kettleman Hills down the west side of San Joaquin Valley, over the mountains along the Ridge Route, through San Fernando Valley, and via Cahuenga Pass into Los Angeles. It is one of the biggest welded gas lines ever built in the State, and should assure the community of an abundant supply of gas from Kettleman Hills and Ventura Avenue Fields, if not from Los Angeles Basin fields, in future years.

HELIUM SUPPLY READY FOR DIRIGIBLE'S FLIGHT

AMARILLO, Tex., July 13.—Enough helium already has been stored at Akron, Ohio, to inflate the dirigible Akron, the world's largest lighter-than-air ship, which is scheduled to make its initial flight the latter part of July.

C. W. Seibel, superintendent of the helium division, Bureau of Mines, said the last shipment of helium from the government plant near Amarillo went out last month. He estimated the amount in storage at Akron at 7,500,000 feet, which would give a reserve of 1,000,000 feet to be used if leaks should appear in any of the gas tanks of the new air liner. A large reserve also is stored here.

Output of the government plant last month was about 1,000,000 feet. Its capacity is two or three times that amount.

TO GET KETTLEMAN GAS

LOS ANGELES, Calif., July 11.—Announcement has been made by city officials that Coalinga will have Kettleman gas by this week. The present supply is an inferior grade compared with the Kettleman product and costs the city considerably more.

The demand for Kettleman gas is continually increasing as great mains are being laid to supply towns and cities throughout California. At present a large gas main is being laid between Kettleman Hills and Long Beach while the Spreckles Sugar Co. will soon be using millions of feet daily in its Salinas plant.

The Irma Investment Co. and the Eagle Co. are two new companies that have gone to work drilling gas wells in the Dudley Ridge area in the confidence that the increasing demand for natural gas will open a market for gas from this area.

LYCOMING GAS CO. CONTROLS MOST OF TIOGA GAS PRODUCTION

WELLSBORO, Pa., July 11.—Completion of a gas sales contract between the Lycoming Natural Gas Co. and Penn United Gas Co., both of Wellsboro, Pa., was announced late Tuesday by which the Lycoming company will buy all Tioga County gas produced by Penn United.

The agreement virtually gives Lycoming Natural Gas the control of most of the gas to be marketed from the Tioga Field. Tuesday's agreement, according to official explanation today, in effect is a contract to buy and market all Penn United gas produced from the Tioga County holdings. The agreement includes, Lycoming officials today stated, only Tioga County leases of Penn United with their two producers, the No. 1 Meaker and the No. 1 Burdett. The Penn United will continue to drill on its leases.

The agreement settles a question which has been unanswered since late February, the marketing of the gas from the No. 1 Meaker, which made history with its uncontrolled volume of nearly 100,000,000 feet of gas. The 7,000,000-foot No. 1 Burdett, located east of the Meaker, will also be included in the agreement. Both of these wells will be hooked into the Lycoming 110-mile pipe line now under construction from the Tioga Field.

The agreement gives Lycoming virtual control of 11 of the 14 Tioga Field producers. Previous agreements with Benedum-Trees Co., of last April, and the North Penn Co. (parent company of Allegany Gas) already has given Lycoming the gas purchase rights of Tioga Field wells owned by these two companies. The Palmer wells, owned by Allegany, were not included in the North Penn agreement since gas from both was already in the North Penn line for domestic consumption. The Allegany reserved rights for sufficient supply for local consumption.

The Lycoming Natural Gas Co. owns the following wells outright, having drilled them under the Lycoming direction: No. 1 Boom, 25,000,000; No. 1 Hoyt, 15,000,000; No. 1 Ashton, 10,000,000; No. 1 M. P. Close, 70,000,000. The following wells were turned over to Lycoming by the North Penn agreement: No. 1 Learn, 22,000,0000; No. 1 Manning, 15,000,000. Only three wells in the field remain out of the picture, the two Palmer wells, now being used for domestic consumption, and the No. 1 Burdett, 2,500,000-foot producer, brought in by the Pennsylvania Power & Light Co.

Present Potential

The Tioga Field production is estimated, according to the above figures, to be about 310,000,000 feet of sweet gas. By virtue of the latest Penn United sales contract agreement, the Lycoming company now controls about 285,000,000 feet of Tioga Field gas. They now own both of the field's largest producers, the No. 1 M. P. Close and No. 1 Meaker.

The Penn United-Lycoming Natural Gas agreement leaves only one producing company in the Tioga Field which is independent of Lycoming control. This company, the Pennsylvania Power & Light, owns the No. 1 Burdett, 2,500,000-foot producer east of the No. 1 Meaker.

The Penn Power & Light Co. now has under construction a gas supply line south from the Tioga Field through Blossburg to Williamsport, Pa. It will be necessary for this company, in order to adequately supply the domestic field south of Tioga County, to practically equal Lycoming Gas in the reserve gas supply available. Future mergers, or intensive drilling by P.P.&L. may be looked for as the Tioga Field develops.

OKLAHOMA NATURAL ASKS NEW TULSA FRANCHISE

E. C. Deal, president of the Oklahoma Natural Gas Corp., says:

"We are laying our plans to ask for a new franchise in Tulsa. It is probable, however, that we will not have our plans definitely worked out before the expiration date of our present franchise. We do not wish to wait until the next city primary to call an election on the question. That is eight months away."

The existing franchise expires July 31 and the election may be held within 60 days. It is the desire of officials of the company for the franchise question to be submitted by itself without other issues to detract attention.

A 25-year franchise will be asked. With a long-term franchise, President Deal said, the credit position of the company will be strengthened. Twenty-five-year bonds can be issued for the financing of development looking to the safeguarding of supply and improved service.

The Western Service Corp., Oklahoma City, and of which E. R. Ernsberger is president, has been reported about to extend its franchise-seeking activities into Tulsa, and build a pipe line from the Oklahoma City Field.

The Western Service Corp. has obtained the Guthrie distribution franchise, and is now seeking the one at Shawnee. It operates in a number of communities in western Missouri and eastern Arkansas and built up a distribution system in western Oklahoma which was sold several years ago to the Insull interests.

Any arbitrary fixing of rates in a franchise granted to the company apparently would not be legally binding on the company as the state law giving the corporation commission rate-fixing authority supersedes the local franchise. The domestic rate in Tulsa has just been reduced by the company from 57 cents to 50 cents. President Deal says the present rate, representing a 12½ per cent reduction under the rate formerly charged, is as low as is consistent with efficient gas service.

CAPPER IS TO PUSH PIPE LINE CONTROL

WASHINGTON, D. C., July 13.—Senator Arthur Capper of Kansas says that at the opening of the next session of Congress he will push the bill placing the interstate pipe lines under government regulation. Since Congress adjourned in March, Senator Capper has conferred with the committee representing the state public service commissions which are attempting to rewrite the Capper bill introduced at the last session. The Kansas senator said he did not know whether the bill as finally approved would place pipe line control under the interstate commerce commission or under an independent federal commission.

MEMPHIS GAS SALES

NEW YORK, July 13.—Memphis Natural gas Co., affiliate of the Appalachian Gas Co., reports for the 12 months ended May 31, sales of 9,637,542,700 feet of natural gas, compared with 8,264,895,500 feet during the preceding 12 months, an increase 16.6 per cent.

The company, which owns a 210-mile pipe line extending from the Monroe Field of Louisiana to Memphis, Tenn., with a 100-mile extension under construction to Jackson, Tenn., markets gas to Memphis Power & Light Co., Mississippi Power & Light Co., Arkansas Power & Light Co., and Louisiana Power & Light Co., and will also market natural gas to the West Tennessee Power & Light Co. on completion of its new line to Jackson.

LAS VEGAS SYSTEM

Construction of the distribution system at Las Vegas, N. Mex., has been started by Southern Union Gas Co., Dallas, Tex. The company is constructing a natural gas transmission line from the Albuquerque-Santa Fe line to serve the town of Las Vegas, and expects to have service inaugurated by September 1.

NORTHERN NATURAL GAS

The 800-mile pipe line of the Northern Natural Gas Co. from Hugoton Field, Southwest Kansas, has begun taking gas from Republic Gas Corp. for transportation to communities in eastern Nebraska and central Iowa. The Northern Natural Gas Co. is owned by the United Light & Power Co., North American Light & Power Co. and Lone Star Gas Corp. The new line is designed for a capacity of 180,000,000 feet and will represent an investment of $30,000,000.

A minimum of 60 per cent of the requirements of the Northern Natural Gas Co. will be supplied by Republic Gas Corp. from its reserves in the Hugoton Field.

BOGALUSA EXTENSION

Louisiana Power & Light Co., with headquarters in New Orleans, La., has obtained franchises to serve natural gas to Slidell, Covington, Amite, Hammond, Ponchatoula and Independence, La. Work was started June 1 on a pipe line extension from the Bogalusa line of the United Gas System. Construction is expected to be completed about September 1, with service available next winter.

H. L. DOHERTY STATEMENT ON KANSAS GAS RATE

KANSAS CITY, Mo., July 13.—Governor Woodring's campaign to force reduced natural gas rates in Kansas communities brought a statement from Henry L. Doherty that "The public is entitled to have fair rates and of a proper character and we in turn are entitled to public confidence if we give proper service and supply gas at proper rates. We are ready to go to a hearing without a single day's delay and welcome the closest scrutiny and the widest possible publicity."

Governor Woodring replied: "I believe permitting the courts to determine the gas controversy in a proper, legal and orderly way will appeal to the reasonable thinking people of Kansas."

MIAMI MUNICIPAL SYSTEM

Bonds for construction or purchase of a municipal gas system have been authorized in an election at Miami, Okla. At the same time citizens authorized creation of a public utility board of four members to supervise construction, development, maintenance and operation of the proposed gas utility and other municipal departments. The city has entered into an optional arrangement to purchase gas from a supply in Nowata County, 40 miles from Miami.

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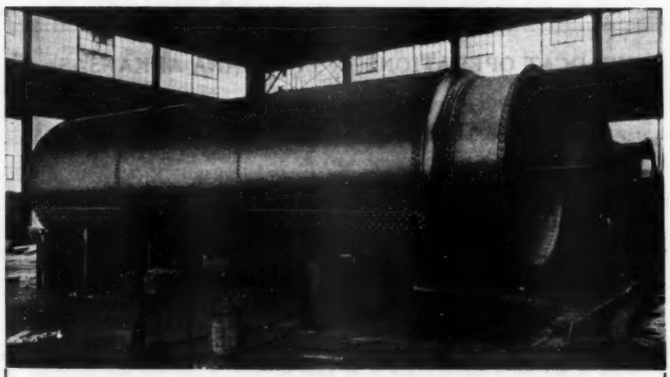

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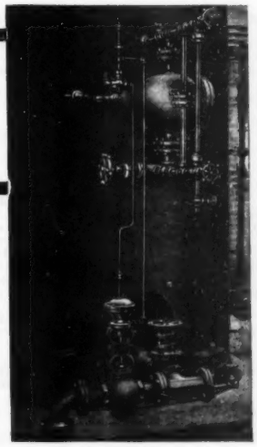

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SOUTHWEST TEXAS PROVEN AREAS

(Continued from Page 44)

SAXET FIELD—NUECES COUNTY

Gulf Coast Oil Co.'s No. 1 Maggie Harrall, 330 ft. from S and W lines of Blk. 32, Sec. 311 ..... T. D. 4,101 ft.; setting liner.
Houston Oil Co.'s No. 1 Lawrence ..... T. D. 2,746 ft.; preparing to complete as gasser.
Houston Oil Co.'s No. 2 Rand Morgan ..... T. D. 6,365 ft.; drlg. shale.
L. L. Smith's No. 1 Hunter, 150 ft. from S and W lines of N half of Hunter tract ..... T. D. 2,368 ft.; tested gas, 1,350 lbs., estimated 25,000,000 ft.

WHITE POINT FIELD—SAN PATRICIO COUNTY

Saxet Oil Co.'s No. 4 White Point ..... T. D. 2,517 ft.; testing sand.

LAREDO DISTRICT

KOHLER POOL—DUVAL COUNTY

Humble Oil & Refining Co.'s No. 50 Kohler, 2,305 ft. from S line, 165 ft. from W line of Sur. 164 ..... T. D. 6,696 ft.; drlg.

COLE POOL—WEBB COUNTY

F. P. Zoch and Trinity Drillers' No. 1 Cuellar, 1,300 ft. from NW and SW lines of Share No. 2, W of Bruni ..... T. D. 2,065 ft.; drlg.

JENNINGS-MUCKELROY POOL—ZAPATA COUNTY

Pray & Chamberlain's No. 5 Garza, 750 ft. to NW line, 450 ft. to NE line, Blk. 1, Zorro Subd. of Comitas grant ..... T. D. 1,371 ft.; in sand; set csg.

CAROLINA-TEXAS POOL—WEBB COUNTY

George S. Marshall's No. 1 Benavides, 660 ft. from S line, 150 ft. from E line of Sur. 683 ..... Location.

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

(Continued from Page 44)

CALDWELL COUNTY

Mills et al's No. 1 McMahon, 275 ft. SW line, 75 ft. SE line of tract, J. Pinchback Sur. ..... T. D. 2,490 ft.; fishing.
M. O. Rayor's No. 1 Dunlap, 150 ft. NW and NE lines of farm, Solomon Seal Sur. ..... T. D. 2,480 ft.; made head of oil; going on pump.

COMAL COUNTY

Caldwell & Lanier's No. 1 T. J. Byler, 175 varas from W line, 370 varas from N line of 320-ac. tract in the H.E.&W.T. No. 5,894 Sur. ..... T. D. 695 ft.; trying to get csg. on bottom.

DEWITT COUNTY

Gibson & Sturm's No. 1 Clark, Dolores Alderete Sur. .... Rigging up.

DUVAL COUNTY

Coffee et al's No. 1 Jose Garza, center Sur. 49 ..... T. D. 1,430 ft.; drlg.
O'Byrne et al's No. 1 Well, B.S.&F. Sur. No. 568 ..... T. D. 2,632 ft.; testing sand.
S. J. Carpenter et al's No. 1 Juan Benavides, Blk. 33, Mesquite grant ..... T. D. 1,712 ft.; standing.
Southern Crude Oil Pur. Co. and Camp's No. 1 Hubbard, 1,650 ft. from S line, 330 ft. from E line of Sur. No. 75 ..... Spudded in.

FAYETTE COUNTY

Elam & Reynolds' No. 1 Florence, M. Muldoon Sur. No. 13 ..... T. D. 2,610 ft.; flowing fresh water.

GOLIAD COUNTY

V. F. Neuhaus' No. 1 J. E. Pettus, 4,750 ft. N, 28 degrees 20 minutes W of extreme SE cor. of 3,418-ac. tract in Maria de Jesus Ybarbo Sur. ..... T. D. 4,292 ft.; sand at 4,282-87 ft.; on 10-minute drill stem test showed 3 jts. of oil, 1 jt. of mud and considerable gas.

GUADALUPE COUNTY

Harry Bruner's No. 2 Jim Sherrill, 330 ft. from NW and SW lines of tract in George Allen League ..... T. D. 180 ft.; changing to rotary rig.
McGarrity et al's No. 1 A. Wesch, Jr., 150 ft. to N and E lines of farm, H. M. Thompson Sur. ..... T. D. 797 ft.; standing.
Schleyer, Atherton and Armstrong's No. 1 Ogletree, Robert Smith Sur. ..... T. D. 1,745 ft.; shut down.
Linne et al's No. 1 J. E. Linne, center 263-ac. tract in V. Cortario Sur. ..... Moving in rig.
San Antonio Oil & Royalty Co.'s No. 1 Dibrell, 150 ft. from N and W lines of Sec. 6, H.&T.C.R.R. Sur. .... Dropped till work starts.
W. J. Walton's No. 1 Zoboroski, 700 ft. W line of tract, 500 ft. S of Guadalupe River, in Joseph D. Clements Sur. ..... T. D. 2,210 ft.; hole standing 1,000 ft. in oil.

HAYS COUNTY

J. C. Jones et al's No. 1 Byder, John Ingram Sur. ..... T. D. 930 ft.; standing.

JIM HOGG COUNTY

Peterman & Minahan's No. 1 Palacios, Sur. No. 231 .... T. D. 1,360 ft.; shut down.
D. C. DeWitt's No. 1 Teofilo Gomez, 1,170 ft. from N line, 150 ft. from W line of Sur. 12 ..... T. D. 200 ft.; shut down.

JIM WELLS COUNTY

Carsil Oil & Gas Co.'s No. 3 McGill, 450 ft. S, 300 ft. E of No. 1 McGill in Wm. D. Baldwin Sur. ..... T. D. 2,630 ft.; coring.
Gulf Prod. Co.'s No. 1 Schaeffer, 632 ft. W of No. 1 Schaeffer in J. Doyle Sur. ..... Abandoned location.

KENDALL COUNTY

Dixon Oil Co.'s No. 1 Ottmar Behr, 823 ft. from S and N lines of Jessie Wilson Sur., 3 miles S of Sisterdale ..... T. D. 2,630 ft.; reaming.
Sitton et al's No. 1 Garvin, C of NE of D. L. Richardson Sur., in the D. L. Richardson Sur., 1 mile NE from Kendalia ..... T. D. 1,482 ft.; shut down.
Fred S. Dibble's No. 1 Ellebrach, Sur. 77, N part of county ..... Spudded in and shut down.
Hicks et al's No. 1 Speck & Wiedner, Thomas Sur. No. 27, 2 miles S of Twin Sisters ..... Location.

KERR COUNTY

Herbert Oil Co.'s No. 1 J. D. Witt, 1,320 ft. N line, 1,320 ft. W line of Sec. 1,923, W. H. Hamilton Sur... T. D. 200 ft.; standing.
Evans & Gant's No. 1 Seiker-Mears, C.C.S.D.&N.G.R.G. Sur. No. 1,605 ..... T. D. 4,028 ft.; shut down.
Evans & Gant's No. 1 E. Young, E. Burge Sur. No. 28 ..... T. D. 150 ft.; drlg.
Evans & Gant's No. 1 Love in J. Martinez Sur. No. 1,-594, 1,320 ft. from W line of survey and 660 ft. S of S line of Sur. No. 1,597 ..... T. D. 3,950 ft.; in black shale; drilling.
Evans & Gant's No. 2 Love, 150 ft. S and W line of Sur. 1,593 ..... T. D. 100 ft.; drlg.
B. M. Hatfield's No. 1 Westland, Blk. 23, Westland Subd. to Kerrville ..... T. D. 460 ft.; standing.

KIMBLE COUNTY

C. L. Bryant et al's No. 1 Lambert, 7,700 ft. N and W lines of F. Lotta Sur. ..... T. D. 850 ft.; standing.

KLEBERG COUNTY

Barbee & Hunter's No. 1 Finnegan, 150 ft. from N and W lines of El Pasodeso Sur., 2 miles S of Ricardo.. T. D. 2,730 ft.; drlg.

LAVACA COUNTY

F. P. Zoch's No. 1 Dobard, 950 ft. from N line, 150 ft. from W line of T. G. Western Sur. ..... T. D. 3,920 ft.; drlg.

LIVE OAK COUNTY

Catlett & O'Neill's No. 1 Hatcher, 253 ft. from S line, 3,200 ft. from W line of 703-ac. tract in James McGloin Sur. ..... Derrick.
Henderson Coquat's No. 1 Hewitt ..... T. D. 400 ft.; drlg.

LEE COUNTY

Burt et al's No. 1 R. C. Saunders, J. Maxmillian Sur. .... T. D. 3,993 ft.; reaming 300 ft. off bottom.
A. H. Wheeler and associates' No. 1 fee, Blk. 47, H. Donohue Sur. ..... T. D. 3,315 ft.; fishing for baller.
C. B. Polk et al's No. 1 Steitz, Hiram Donohue Sur. .. T. D. 3,300 ft.; shut down.

McLENNAN COUNTY

C. E. Groene et al's No. 1 League ..... T. D. 1,230 ft.; shut down.

McMULLEN COUNTY

Belt Pet., Inc.'s No. 1 Martin, 150 ft. NW line, 150 ft. to SW line of E. Melon No. 212 Sur. ..... T. D. 28 ft.; standing.
Whall, Scherer et al's No. 1 Shiner, Henry Brewer Sur... T. D. 2,008 ft.; shut down.

MEDINA COUNTY

J. H. Hickey's No. 1 Jungman, at N end Chicon Lake... T. D. 565 ft.; shut down.
Sunflower Oil Co.'s No. 1 Mofield, J. Brothag Sur. No. 532 ..... T. D. 2,040 ft.; sulphur water; plugging back.
F. E. Tegler's No. 1 J. P. Nixon, 600 ft. from W line, 584 ft. from N line of tract, near Ina Field ..... T. D. 922 ft.; drlg.
Yancey Development Co.'s No. 1 Fassler, Sur. No. 301 .. T. D. 1,827 ft.; drlg.

MILAM COUNTY

Dil-Tex Oil Corp.'s No. 1 Dilbeck, 450 ft. N and E lines of farm, Fernando Rodrigues Sur. ..... T. D. 2,425 ft.; shut down.
H. Elliott's No. 1 Kirkman, 150 ft. from NE lines of farm, in M. Park Sur., NW from Gabriel ..... T. D. 1,725 ft.; abnd.; dry.
Red Bank Oil Co.'s No. 1 Foster, A. G. Berry Sur. ..... T. D. 2,714 ft.; drlg.
Wilson-Broach Co.'s No. 1 E. L. White, 250 ft. from S and E lines of S. Frost Sur. ..... Location.

NUECES COUNTY

Southern Crude Oil Pur. Co.'s No. 1 Charles E. Stratton, 1,650 ft. E line, 330 ft. S line of P. Sancho Sur. .... T. D. 1,656 ft.; drlg.

REAL COUNTY

McGinley Corp.'s No. 1 Haby, C of SW Sec. 175 ..... T. D. 2,165 ft.; fishing.
Gant-Kilgore and Evans' No. 1 A. D. Auld, C.C.S.D.& N.G.R.G. Sur. No. 23 ..... T. D. 4,007 ft.; hole clean; shut down.

SAN PATRICIO COUNTY

Jacob, Busini, Pickett's No. 2 Baldwin, three-fourths mile from S and W lines of tract ..... Derrick.
United Production Co.'s No. 1 Mayfield ..... T. D. 2,900 ft.; drlg.

STARR COUNTY

Los Olmos Oil Co.'s No. 5 Kelsey-Bass, 300 ft. N of No. 4 ..... T. D. 420 ft.; drlg.

TRAVIS COUNTY

Taylor Production Co.'s No. 2 Smith, 550 ft. from W line, 600 ft. S of No. 1 in Lemuel Kimbro Sur. ..... T. D. 1,025 ft.; abnd.; dry.

WEBB COUNTY

Cole Pet. Co.'s No. 4 Benavides, Sur. No. 1,613 ..... T. D. 2,732 ft.; drlg.
Eugene Garner, Jr.'s No. 1 Billings, 411 ft. E line, 956 ft. N line of NW NE, Sur. 71 ..... Building derrick.
Southern Gas Utilities and O. W. Killam's No. 1 de la Garza ..... T. D. 2,211 ft.; in sand showing gas; set csg.

WILLIAMSON COUNTY

Hays & Gee's No. 1 E. G. Johnson, 1,800 ft. from N line, 170 ft. from E line of tract in B. C. Low Sur., S of Georgetown ..... T. D. 725 ft.; drlg.

WILSON COUNTY

A. M. Blume's No. 1 Nickolson, C. Diaz Sur. ..... T. D. 925 ft.; rigging up to bail.
Sun Oil Co.-Penn Oil Co.'s No. 1 Tudyke ..... Rigging up.

ZAPATA COUNTY

A. R. McLennan's No. 3 Cuellar ..... T. D. 1,000 ft.; drlg.
T. H. Ward's No. 1 Uribe, 150 ft. NW line, 150 ft. SW line, Blk. 8 Subd., Share 7, Partition No. 6, T. Uribe Partition of Jose V. Borrego Sur. ..... Rigged up and standing.
Bill Henry et al's No. 1 Gopher Trust estate, Borrego grant ..... T. D. 1,365 ft.; standing.
Penny Prod. Co.'s No. 1 Juan V. Cuellar, Jr. et al, 175 ft. NE line, 175 ft. SE line Poppas Subd., Porcion 33 and 34, Blk. 1, Sur. 2 ..... T. D. 2,035 ft.; drlg.
National Oil Co.'s No. 1 Zapata Trust Estate, 617 ft. NW line, 96 ft. NE line, Blk. 97, De Prom Subd., Porcion 6 ..... T. D. 690 ft.; drlg.
National Oil Co.'s No. 2 Adams, 150 ft. from NW line and SW line, Blk. 11, Borrego grant ..... T. D. 1,320 ft.; drlg.

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Continued from Page 46)

RICHLAND PARISH

Alto Gas Co.'s No. 2 Hunt, 660 ft. S and E, NW cor., Sec. 13-17-5 ..... Derrick.
Southern Carbon Co.'s No. 1 C. M. Noble, 2,966 ft. N, 1,525 ft. W, cor. Secs. 7, 8, 17 and 18, in Sec. 27-15-6. Location.

SABINE PARISH

Diffie & Barnett's No. 1 Lites (was J. W. Clark's), 330 ft. N, 330 ft. W, SE cor. SW NW, Sec. 34-8-11..... S.D. 105 ft.
R. L. Gay, tr.'s No. 1-A Long Bell Lbr. Co., 430 ft. S, 200 ft. W, NE cor. NW NW, Sec. 10-8-13..... Drlg. lime 3,560 ft.
Langbridge Oil Co.'s No. 1 Stephens, 330 ft. N and E, SW cor. SE NE, Sec. 17-9-11..... Drlg. 900 ft.
J. J. Keen, tr.'s No. 1 Belton (no check), Sec. 31-9-12.. Set 8-in. 1,590 ft.
H. W. Perritt's No. 4 Bowman-Hicks, SE cor. SE NE, Sec. 2-7-12 ..... Tested small show oil 2,502 ft; S.D.; W.O.
A. H. Thames' No. 1 Edward est., 150 ft. NW SE cor. NE SE, Sec. 8-8-13..... S.D. for wtr. 1,200 ft.

TENSAS PARISH

A. R. Willis et al's No. 1 Currey, 1,320 ft. S, 1,320 ft. E, NW cor., Sec. 39-11-12..... S.D. 3,545 ft.

UNION PARISH

Dan Brooks' No. 1 Odus Douglas, 330 ft. S and E, NW cor. NE SW, Sec. 9-22-2..... Location.
T. P. Fields, tr.'s No. 1 Summitt Land Co., C W½ NW, Sec. 1-21-1w..... Began July 5; drlg. 100 ft.
United Gas Public Service Co.'s No. 2 Stevens, 4,593 ft. N, 536 ft. W, SE cor., Sec. 36-21-3..... Began July 3; set 12½-in. 153 ft; set 8-in. 672 ft.

WEST CARROLL PARISH

United Gas Public Service Co.'s No. 1 Pioneer Cooperage, 663 ft. E, 3,954 ft. S, NW cor., Sec. 29-21-9.... Drlg. 3,235 ft.

WINN PARISH

Gulf Ref. Co.'s No. 1-A Bodcaw Lbr. Co., 911 ft. N, 970 ft. E, SW cor., Sec. 4-10-5w..... Drlg. shale 3,875 ft.

ARKANSAS

CHICOT COUNTY

R. R. Smith's No. 1 Lytle, 660 ft. N, 660 ft. E, C, Sec. 21-23-3 ..... T.A. 2,925 ft.

COLUMBIA COUNTY

Kendall Oil Co.'s No. 1 Fullenweider, Rhea & Kitchen, Sec. 13-17-23..... S.D. 778 ft.

CLAY COUNTY

S. C. Jeffus' No. 1 Underwood, 510 ft. N, 350 ft. W, C NW SE, Sec. 4-20-5..... Repairing derrick 1,253 ft.

CLEVELAND COUNTY

Crum & Stillwell's No. 1 E. R. Bell, Sec. 10-10s-12w.... Rigging up.

CLEBURNE COUNTY

(Cable tools)

Donnelly-Craver et al's No. 1 Donophan Lbr. Co., SE cor. NW, Sec. 33-11-9..... S.D. 3,740 ft.

DALLAS COUNTY

E. C. Brewer's No. 1 W. E. Hillman, 330 ft. E, 40 ft. S, NW cor. SE NE, Sec. 30-10-13..... S.D; W.O. 2,869 ft.
J. H. James, tr.'s No. 1 Fordyce Lbr. Co., 200 ft. S, 200 ft. E, NW cor. NW NE, Sec. 11-9-15..... S.D. funds 2,520 ft.

HOT SPRINGS COUNTY

Star Oil Co.'s No. 1 Cunningham, 285 ft. S, 285 ft. W, NE cor., Sec. 11-5-16..... S.D. 1,300 ft.

LINCOLN COUNTY

Lawrence Cook, tr.'s No. 1 McGhee Planting Co., 420 ft. S, 220 ft. W, NE cor. NE SW, Sec. 5-8-7.....Arranging 10-in. 1,294 ft; T.D. 2,110 ft.

LITTLE RIVER COUNTY

Roberts Oil Co.'s No. 1 H. J. Russell, 330 ft. E, 330 ft. S, NW cor., Sec. 25-12-29.....Location.

LOGAN COUNTY

J. H. Flowers' No. 1 J. H. White, Sec. 13-6-26.....S.D; W.O. 3,570 ft.

W. E. Noel et al's No. 1 Dickson hrs., 1,980 ft. W, 660 ft. S, NE cor., Sec. 11-20-27.....Location.

OUACHITA COUNTY

Copenhaven et al's No. 1 Elliott, Sec. 11-15-17.....Bailed dry 2,210 ft.; S.D.; W.O.

Boling & McLeon's No. 1 L. D. Nealy, 150 ft. S, 150 ft. W, NE cor. SE SW, Sec. 25-16-15.....Drlg. shale 2,020 ft.

PIKE COUNTY

E. R. Henderson's No. 1 Tilyou, 660 ft. W, 500 ft. S, NE cor. NE SE, Sec. 26-8-14.....T.A. 2,909 ft.

E. R. Henderson's No. 1 J. L. Lee, 400 ft. S, 350 ft. E, NW cor. SW SE, Sec. 31-8-24.....Set 6⅝-in. 507 ft; T.D. 1,000 ft.

SCOTT COUNTY

Heavener O. & G. Co.'s No. 1 Riser, Sec. 36-4-26.....S.D; T.D. 1,436 ft.

Waldron O. & G. Co.'s No. 1 White, NE cor. SW NW, Sec. 17-3n-29.....S.D; waiting on csg. 1,360 ft.

SEBASTIAN COUNTY

Ozark Nat. Gas Co.'s No. 1 E. O. Girard, C NW NW, Sec. 34-8-30.....Location.

UNION COUNTY

Chapman & Wilson's No. 1 A. H. Hadley, 330 ft. N, 330 ft. E, SW cor. NE SW, Sec. 8-18-13.....600 ft. fluid 30% S.W. in hole; T.A. 3,570 ft.

WASHINGTON COUNTY
(Cable tools)

C. H. Willoughby's No. 1 Jones, Sec. 34-16-30.....S.D. for funds 1,795 ft.

YELL COUNTY
(Cable tools)

Tegmeier & Luckett's No. 1 Falcon, Sec. 36-7-21.....S.D. 5,710 ft.

EAST TEXAS
BOWIE COUNTY

Devore & Midfield's No. 1 Roy B. Cooper, 200 ft. S, 200 ft. W of NE cor. R. B. Cooper 115-ac. tr., Wm. Ward Sur.....Dry and abd. 3,008 ft.

Hindeman & Bail's No. 1 Merritt (was Maud-Redwater Oil Co.'s), 175 ft. N, 175 ft. E, SE cor. G. W. Hardidge 100-ac. tr. on Floyd Merritt tr. in Y. S. McKinney Sur.....S.D. 2,520 ft.

Tarkington & Jones' No. 1 W. W. Whybark, 200 ft. S, 200 ft. W of SW cor. J. H. Dyer Sur.....Began June 30; spudded 30 ft; S.D.

Lee Timberlake et al's No. 2 Tidwell, 2,510 ft. N, 655 ft. W, SE cor. T. M. Rice Sur.....S.D. 3,000 ft.

CAMP COUNTY

McDonald Bros.' No. 1 Tillery, 150 ft. E, 450 ft. S, NW cor. 127-ac. tr. in J. H. Murphy Sur.....S.D. 3,600 ft.

CASS COUNTY

E. K. Atkinson's No. 1 T. J. Wilson, 1,088 ft. S of N line, 2,376 ft. E of W line of H.R.S., J. R. McFarland Sur.....Drlg. chalk 2,892 ft.

R. G. Baker's No. 1 W. R. Caver, on W. R. Caver 75-ac. tr., John Lick Sur.....S.D. 2,630 ft.

Davis & Pigg's No. 1 Roy Brian, SW cor. Roy Bryan 88-ac. tr., Albert H. Latimer Sur.....S.D. 2,055 ft.

Everts Drlg. Co.'s No. 1 H. W. Whittington, 200 ft. S, and W, NE cor. 69-ac. Whittington tr., L. Strong Sur.....Drlg. 2,787 ft.

Geo. McKamie's No. 1 R. E. Hall, 150 ft. N, 150 ft. W, SE cor. Hall's 117-ac. tr., H. Buckler Sur.....S.D; W.O. 4,001 ft.

C. E. Murdock's No. 1 First National Bank, Evans Watson Sur.....Arranging to resume drlg. 3,990 ft.

John Nelson's No. 1 T. A. Irvin, 200 ft. S and E of NW cor. McNary Harris Sur.....Drlg. chalk 2,473 ft.

Olds & Smith's No. 1 Atheny, 3,056 ft. W.E line, 356 ft. S-N line, J. C. Byers Sur.....S.D. 3,100 ft.

John C. Rogers' No. 1 I. E. Lanier, 573 ft. N, 879 ft. W, SE cor. Lanier 86 ac. in K. E. Welborn Sur.....S.D. 2,275 ft; arranging to resume drlg.

John C. Rogers et al's No. 1 W. Q. Henderson, 3,100 ft. S, 3,100 ft. E, NW cor., Wm. Davis Sur.....S.D. 955 ft.

HARRISON COUNTY

Ben Banner's No. 1 J. C. Lowery, in center of J. C. Lowery 5-ac. tr., W. D. Stanfield Sur.....Dry and abd. 3,300 ft.

Gholson et al's No. 1 Bivins Farm Co., on J. K. Bivins, Jr.'s 320-ac. tr., Thos. Toby Sur.....Drlg. chalk 2,480 ft.

Lloyd Oil Corp.'s No. 1 E. S. Timmons, 150 ft. from N line to 250 ft. from E line of 105-ac. tr., Findley Sur.....Began June 30; set 10-in. 240 ft.

O. O. Olford et al's No. 1 R. W. Bolding, 330 ft. E of SE cor. J. B. Cullen's 161-ac. tr., 300 ft. N of N line of Mrs. C. L. Brown's 20-ac. tr., W. W. O. Stanfield Sur.....Drlg. 2,600 ft; (O. O. Olford).

O. H. Parkening's No. 1 T. J. Taylor, C, Blk. 32, W. H. Payne Sur.....S.D. 2,530 ft.

Ryan Consolidated Pet. Corp.'s No. 1 Dr. H. H. Key, 1,500 varas N of SE line, 500 varas E of SW line, of E. Carroll Sur.....Drlg. shale 4,230 ft.

Ryan Consolidated Pet. Corp.'s No. 1 J. M. Furh, 1,300 ft. N of NW cor. T. J. Copelin Sur., 1,675 ft. SW at right angles to NW SE line of O'Neal Sur.....Derrick.

Thomas & Kinsey's No. 1 J. R. Watson, Thos. Iden Sur..Rigging up.

MARION COUNTY

Gist, Claunch & Dodson's No. 1 Miller, 1,470 ft. E line, 725 ft. N line, SW cor. H. Fulgran H.R. Sur.....S.D. 300 ft.

Geo. Hindeman et al's No. 1 F. V. Lindsey, 2,500 ft. S, most northerly N line, 2,555 ft. E most easterly W line, Alexander Albright Sur.....S.D. 2,380 ft.

Hindeman & Rhondo's No. 1 McGaughey, 1,647 ft. W most northerly SW cor., 1,638 ft. N most northerly S line, W. J. Willis Sur.....S.D. 3,910 ft.

Shelton et al's No. 1 J. M. McNeal, 800 ft. S, 400 ft. W, NE cor. McNeal's 721-ac. tr., R. Fowler Sur.....S.D. for fuel 3,750 ft.

PANOLA COUNTY

Hoffer et al's No. 1 Cameron Lbr. Co., center 1,306-ac. tr. in W. M. A. LaGrove Sur.....Derrick.

Moses & Wallace's No. 1 Daniel, 600 ft. N and W lines, Mrs. Gerrell 100-ac. tr., SW cor. Isabel Hanks Sur...Derrick.

G. A. Davidson's No. 1 Latham, Wm. Rich Sur.....S.D; changing to heavy rig 550 ft.

J. L. Nelson et al's No. 1 J. W. Williams, 300 ft. S, 700 ft. W, NE cor. Williams' 67-ac. tr. in Jas. Hanks Sur.....Drlg. 625 ft.

RED RIVER COUNTY

D. M. Buffington's No. 1 Hessler, E. Hughhart Sur. ...S.D. 2,795 ft.

Johnson Pet. Co.'s No. 2 Randolph, Edw. Dean Sur. ....S.D. 2,280 ft.

SHELBY COUNTY

I. M. Bradley's No. 1 Ashberry (no check), G. W. Mitchell Sur.....S.D. 3,320 ft.

E. L. Chapman's No. 1 Pickering Lbr. Co., C. E. Henry (headright).....Set 300 ft. 6⅝-in.; arranging to kill.

Chapperell Oil Co.'s No. 2 Holt, Matthew Moore Sur. ....Arranging to set 6⅝-in. 3,127 ft.

K. H. Francis' No. 1 John Mims, Mary Smith Sur. ....Rigging up.

H. P. Glidden's No. 1 Pickering Lbr. Co., Jonas Harrison Sur., 300 ft. E of NW cor., 150 ft. S of N line at right angles Pickering 59-ac. tr.....Drlg. 2,230 ft.

H. H. Gracey's No. 1 J. A. Morrison, 1,500 ft. N, 300 ft. E, SW cor. J. A. Morris' 109-ac. tr., Wm. English Sur.....S.D. 2,600 ft; drlg. wtr. well.

Wm. A. Stephens' No. 1 Foster & Billingsly, 150 ft. W of CEL Foster & Billingsly's 109-ac. tr., J. Bowlin Sur.....S.D. 1,540 ft.

T. A. Martin's No. 1 J. B. Bush, S 3° E, 2,000 ft. from NW cor. J. B. Bush's 77-ac. tr., thence E at right angles to said line 200 ft., Alfred Lindsey Sur. .....Derrick.

Henry Maulding's No. 1 Frost Lbr. Co., NE cor. Frost Lbr. Co.'s 30-ac. tr., A. D. Fountain Sur. .....Arranging to resume drlg. 1,380 ft.

Geo. N. Pace's No. 1 E. H. Powers, western J. Timms Sur., 150 ft. E of W line, 200 ft. N of S line Powers 126-ac. tr. .....Derrick.

Ridgeway et al's No. 1 Polley, Domingo Gonzales Sur., 3,180 ft. E of SW cor., 160 ft. N at right angles of Polley 457-ac. tr. .....Derrick.

Schultz et al's No. 1 Hughes, 150 ft. SW cor. Hughes' 110-ac. tr., J. Clay Sur. .....Drlg. hard lime 3,100 ft.

Sloan Prospecting Co.'s No. 1 Sanford, approximately 300 ft. N and 200 ft. E, SW cor. B. Sanford 49-ac. tr. in M. M. Van Sur. .....Drlg. broken lime and shale 3,400 ft.

C. H. Tautenhahn's No. 1 J. C. Bogard, 300 ft. S, 900 ft. E, NW cor. J. C. Bogard's 52-ac. tr., Thomas Baker Sur. .....S.D. 20 ft; waiting on D.S.

Tenant et al's No. 1 J. Henry, C. Z. Walker Sur. .....Rigging up.

LOUISIANA-ARKANSAS PROVEN AREAS

(Continued from Page 46)

Loring Oil Co.'s No. 17 Bowman-Hicks, 1,600 ft. S, 275 ft. W, NE cor., Sec. 16-7-12.....Rigging up.

Lyons & Neely's No. 1 Duggan, NW SE, Sec. 14-7-11....Location.

Magnolia Pet. Co.'s No. 1 Peterson, 200 ft. S and E, NW cor. NE NE, Sec. 10-7-11.....Began July 7; set 12-in. 130 ft.

L. K. McGuffin's No. 1 Bush, NW cor. NW SE, Sec. 1-7-11 .....S.D. 400 ft.

Ben Merritt, tr.'s No. 2 Byrd, Sec. 1-7-11.....S.D. 88 ft.

Sabine Royalties Co., Inc.'s No. 1 Hill, 400 ft. S, 200 ft. E, NW cor. NE NE, Sec. 5-7-11.....Deepened to 2,546 ft; W.O.S.R.

The Texas Co.'s No. 1 A. L. Landrum, 330 ft. S and W, NE cor. SE, Sec. 32-8-11.....Drlg. hard chalk 2,375 ft.

The Texas Co.'s No. 1 G. L. Nabours, 1,120 ft. S, 530 ft. W, NE cor. SE, Sec. 2-7-11.....Derrick.

Houston-Sabine Prod. Co.'s No. 1 Sabine Lbr. Co. (was Triangle Pet. Co.'s No. 2 Sabine Lbr. Co.), 330 ft. N and E, SW cor., Sec. 36-8-12.....S.D. 2,440 ft.

WEBSTER PARISH

Cassidy & Davis' No. 1 Nickerson, 300 ft. S, 300 ft. W, NE cor. SW, Sec. 29-23-10.....Abd. 150 ft.

ARKANSAS
UNION COUNTY—ELDORADO

Lion O. & R. Co.'s No. 9-A G. P. Hayes, 242 ft. S, 246 ft. W, NE cor. Lot 5, NE, Sec. 4-16-15.....Coring hard formation 4,323 ft.

Southern Prod. Co.'s No. 1 Wingfield, NE cor. SE NW, Sec. 16-19-15.....S.D. 2,608 ft.

UNION COUNTY—URBANA

Marine Oil Co.'s No. 1 Winn est., 330 ft. S and E, NW cor. 8¼ NW, Sec. 11-18-13.....T.A. 3,586 ft.

Marine Oil Co.'s No. 2-E Thompson, 330 ft. N, 330 ft. E, SW cor. NE NE, Sec. 10-18-13.....Location.

Wilson & Chapman's No. 1 Adkins, 330 ft. N and W, SE cor. SW NE, Sec. 3-18-13.....Set 6⅝-in. 3,600 ft; T.D. 3,610 ft.

EAST TEXAS
PANOLA COUNTY

Ark.-La. P. L. Co.'s No. 14 Werner, 341 ft. S, 300 ft. W, NE cor. Werner 74-ac. tr., Ben C. Jordon Sur. .....Coring in anhydrite 4,587 ft.

Daisy O. & G. Co.'s No. 1 Rucks, John Palmer Sur. ...S.D. 2,740 ft.

Dillon & Braham's (was W. G. Banks et al's) No. 1 C. O. Baldwin, 1,395 ft. W, 1,362 ft. S, NE cor. Baldwin 290 ac., in Hampton West Sur. .....S.D. 1,555 ft.

United Prod. Corp.'s No. 17 Steele, 1,320 ft. N, 660 ft. W, SE cor. C. D. Steele lse., in B. C. Jordan Sur. ...Location.

United Prod. Corp.'s No. 10 Warner, 388 ft. N, 2,467 ft. W, SW cor. Thos Cox Sur. in Ben Jordon Sur. .....Drlg. 4,684 ft.

Southwestern O. & G. Co.'s No. 1 E. R. Vinson, 3,005 ft. S, 1,001 ft. W, NE cor. C. T. Anderson Sur. ....S.D. 2,650 ft.

MISSISSIPPI
HINDS COUNTY

Hopkins Gas Co.'s No. 1 Ridgeway, 680 ft. N, 70 ft. W, SE cor. NW, C, Sec. 2-5-1e.....Began June 27; set 10-in. 192 ft; drlg. 842 ft.

Love Pet. Co.'s No. 3 Maley, 2,780 ft. E, 960 ft. S, NW cor., Sec. 15-5n-1e.....Rigging up.

WILDCAT OPERATIONS IN MISSISSIPPI

CLAY COUNTY
(Cable tools)

Company, farm and location— Remarks:

Ohio Oil Co.'s No. 1 Cantrell, NE cor., Sec. 16-15-5.....Repairing rig; T.D. 4,308 ft.

HINDS COUNTY

Attkisson & Dyer's No. 1 Downing et al, SE NE, Sec. 27-6-1 .....Drlg. 2,580 ft.

Community Gas Co.'s No. 1 Millsaps College, Sec. 34-6n-1e .....Location.

Gulf Ref. Co.'s No. 1-A Hanna, Sec. 23-6n-1e.....Set 15½-in. at 82 ft.

Howard Oil Co.'s No. 1 Jackson College, C NW NW, Sec. 9-5-1e .....S.D. 74 ft.

Southern Pet. Co.'s No. 1 Wilson (was Tri-State O. & G. Co.'s), 320 ft. E, 240 ft. N, SW cor. SE NE, Sec. 28-6-1e .....S.D. 20 ft; W.O.

HUMPHREYS COUNTY

Danciger O. & G. Co.'s No. 1 Belgrade Lbr. Co., C NW, Sec. 29-14n-4w .....Location.

JASPER COUNTY

Bay Springs Pet. Co.'s No. 1 Keyes, C NW NE, Sec. 2-12-9 .....Reaming to bottom 2,032 ft.

JEFFERSON COUNTY

Stokes & Cleve Love's No. 1 Phillips, Sec. 14-10n-2w....Rig up.

MONROE COUNTY

Amory Dev. Co.'s No. 1 Bourland, Sec. 2-13-19.....S.D. 3,015 ft.

McAlpine et al's No. 1 Cowart, second hole, Sec. 2-12-19. Resetting 6⅝-in. 2,231 ft; T.D. 2,950 ft.

NEWTON COUNTY

Bob Talton et al's No. 1 Majure, 400 ft. N, 600 ft. W, SE cor., Sec. 25-16n-11e.....Derrick.

NOXUBEE COUNTY

Thompson & Donohue's No. 1 Donohue, Sec. 25-16n-17e..Rigging up.

RANKIN COUNTY

Attkisson & Dyer's No. 1 Valentour, 200 ft. S, 200 ft. E, NW cor., Sec. 18-5n-2e .....Began June 25; set 15½-in. 31 ft.

Harding & Flint's No. 1 Webb, center Lot 32, Blk. B, East Jackson Place, Jackson City Subd., Sec. 13-5-1.S.D. funds 880 ft.

R. A. Moore et al's No. 1 Interior Lbr. Co., Sec. 28-6-1e..S.D. 900 ft.

Cleve Love's No. 1 Muse, SE cor. SW SW, Sec. 32-7-4e..S.D. 4,000 ft.

Square Deal O. & G. Co.'s No. 1 Spann, NW cor. SE NE, Sec. 13-5n-1e.....Derrick.

Union Drlg. Co.'s No. 1 Pate Royalty Co., NW cor. Lot 11, Blk. F, E. Jackson Pl., First Addn., Sec. 13-5n-1e. Drlg. 2,000 ft.

United Gas Public Service Co.'s No. 1-A Hartfield, Sec. 7-5n-2e .....Drlg. 2,461 ft.

Willis & Culley's No. 1 Applewhite & Holden, 10 ft. N, 60 ft. E, SW cor., Sec. 13-5n-1e.....Derrick.

SCOTT COUNTY

M. U. Culley et al's No. 1 Owens, Sec. 2-5-9.....Derrick.

WARREN COUNTY

Eagle Bend O. & G. Co.'s No. 1 Kiger, SW cor. SW SE, Sec. 9-18-3.....S.D.; W.O. 2,335 ft.

WEBSTER COUNTY

P. J. McAlpine's No. 1 Henly (was Cumberland Oil Co.'s No. 1 Henly), SE NW, Sec. 16-21n-11e.....Drld. to 1,960 ft.

WINSTON COUNTY

Miss. Drlg. Co.'s No. 1 Scarbrough, NW cor., Sec. 15-12-14 ..... S.D. 3,437 ft.

YALOBUSHA COUNTY

Collett-Carter Oil Co.'s No. 2 Blackmur, 990 ft. W, 285 ft. N, C, Sec. 11-11-4 ..... S.D. 3,462 ft.

GULF COAST FIELDS AND WILDCATS

(Continued from Page 45)

DAMON MOUND—BRAZORIA COUNTY

Layne et al's No. 8 Wisdom, 155 ft. from NW line and 150 ft. from NE line, Lot 52, Blk. D, Wisdom Subd., A. Darst Sur. ..... Derrick.

D. C. Wellock's No. 1 Hamon, John P. Mills Sur., 1,115 ft. NE line and 60 ft. W line Blk. 1 ..... Sandy shale 690 ft.; set 4½-in. csg.; to test.

BLUE RIDGE—FORT BEND COUNTY

Teischaw et al's No. 5 Blakely, 90 ft. E and 150 S of NW cor. of E half, Lot 4, Blk. F, E. Drew Sur. ..... Total depth 3,105 ft.; plugged to 2,400 ft.; to sidetrack.

ESPERSON—LIBERTY COUNTY

Cranfill-Reynolds Oil Co.'s No. 7 Davis, David Kokernot Sur., 100 ft. S of No. 4 ..... Shale 6,302 ft.; cmtd. 9⅝-in. csg. on bottom.

Cranfill-Reynolds Oil Co.'s No. 19 Esperson, C. W. Fisher Sur., 400 ft. E No. 9 and 550 ft. N No. 14 ..... Drlg. shale 3,880 ft.

ORANGE—ORANGE COUNTY

Gulf Prod. Co.'s No. 1 K. Kishi, J. Dyson Sur., 378 ft. from E line and 334 ft. from S line of tract ..... Drlg. water sand 4,882 ft.

Jefferson Production Co.'s No. 1 Bland ..... Drlg. shale 2,650 ft.

HANKAMER—LIBERTY COUNTY

Gulf Prod. Co.'s No. 14 Boyt, H.&T.C. Sur. No. 22, 500 ft. N of No. 10 ..... Drlg. sticky shale 4,869 ft.

MOSS BLUFF—LIBERTY AND CHAMBERS COUNTIES

Humble Oil & Ref. Co.'s No. 7 Sterling, J. McFaddin Sur., 350 ft. S and 100 ft. W No. 6 Sterling ..... Total depth 6,426 ft.; abnd.

REFUGIO—REFUGIO COUNTY

Houston Oil Co.'s No. 6 Pratt-Hewitt-Rooke (D.D.), Thomas Mullen Sur., 1,150 ft. N and 200 ft. W of SE cor. of tract ..... Cored sand showing oil 3,699-3,704 ft.; setting liner.

Mission Drilling Co.'s No. 2 J. J. O'Brien, Refugio town 1½-acre tract ..... Coring sand 6,441 ft.

tract, 150 ft. from E line and 150 ft. from S line

Moody-Seagraves Producing Co.'s No. 4 O'Connor, Refugio Town Tract, 150 ft. from N line and 1,282 ft. from W line of 60-acre tract ..... Pulling liner to deepen 5,456 ft.

T. P. Morgan's No. 1 Lambert, Refugio town tract, 450 ft. from N line and 650 ft. from W line of 105-acre tract ..... Sand 5,861-67 ft.; trying to make drill stem test.

Pearson Properties' No. 5 Ryals, 174 ft. from S line of lease and 475 ft. E of No. 3 ..... Oil sand 6,403-17 ft.; comp. flowing 200 bbls. pipe line oil, 2,000 lbs., ¼-in. choke.

United Prod. Corp.'s No. 6 O'Brien, 150 ft. from S line of tract, 350 ft. W No. 3 ..... Oil sand 6,438-51 ft.; cmtd. 7-in. csg. 6,438 ft.; drlg. plug.

United Prod. Corp.'s No. 1-B W. J. Fox, Wm. Hews and L. Brown Sur., 2,541.7 ft. NE along SE line from SE cor. lease and 330 ft. NW at right angles ..... Sticky shale 3,942 ft.; cmtd. 9-in. (O.D.) csg.

and L. Brown Sur., 2,514.7 ft. NE along NW line

United Prod. Corp.'s No. 4 M. F. Lambert, Wm. Hews from SW cor. lease and 330 ft. SE at right angles... Drlg. sand and shale 198 ft.

United Prod. Corp.'s No. 5 Holmes Heard, 660 ft. from N line and 2,375 ft. from W line, Blk. 8, town tract.. T. D. 2,765 ft.; plugged to 2,660 ft.

SOUTH LOUISIANA FIELDS

LOCKPORT—CALCASIEU PARISH

Vacuum Oil Co.'s No. 5-A Farquahar, 105 ft. S and 110 ft. E of NW cor. SW NE Sec. 3-10s-9w ..... Drlg. shale 5,143 ft.

JENNINGS—ACADIA PARISH

Port City Oil Co.'s No. 13 Jennings-Heywood, 2,650 ft. NW of SE cor. N one-fourth of fractional Sec. 41 9s-2w, 675 ft. from the W line ..... Drlg. shale 1,682 ft.

Yount Lee Oil Co.'s No. 10 Housierre-Latrielle, 5,435 ft. E and 1,070 ft. N of SW cor., Sec. 47-9s-2w ..... Drlg. gumbo 1,426 ft.

EDGERLY—CALCASIEU PARISH

Rex Pet. Co.'s No. 2 Prairie Narroni, Sec. 21-9s-11w, 360 ft. from S line and 50 ft. from E line of lease ..... Total depth 4,143 ft. in salt; sidetracked to 4,060 ft.; set 10 ft. 3-in. screen; tested salt water; standing.

HACKBERRY—CAMERON PARISH

R. E. Seiss' No. 3 J. M. Vincent ..... Total depth in rock 2,042 ft.; cmtd. 6⅝-in. csg. 2,004 ft.

J. G. Sutton's No. 1 Erwin, Sec. 13-12s-10w ..... Location.

The Texas Company's No. 8 State ..... Derrick.

VINTON—CALCASIEU PARISH

Vinton Pet. Co.'s No. 7 Matilda Gray (D.D.), 157 ft. N and 674 ft. W of SE cor. SW NE of Sec. 33-10s-12w.. Set 15 ft. 3-in. screen 3,124 ft.; tested salt water; to deepen.

FORT BARRE—ST. LANDRY PARISH

The Texas Company's No. 10 Botney Bay, Sec. 4-6s-5e, 100 ft. S line and 100 ft. E line, Daniel 55-acre tract.. Sandy shale showing oil 3,923 ft.; to test.

SWEET LAKE—CAMERON PARISH

Magnolia Pet. Co.'s No. 2 Sweet Lake, Sec. 5-13s-7w ..... Drlg. sand and shale 6,648 ft.

Pure Oil Co.'s No. 5 Yount Lee (D.D.), Sec. 12-13s-8w ... Temporarily abnd. 5,658 ft.

SULPHUR—CALCASIEU PARISH

Union Sulphur Co.'s No. 767 fee, 328 ft. E and 180 ft. N of C Sec. 29-9s-10w ..... Oil sand 3,737-45 ft.; cmtd. 9⅝-in. csg. 3,737 ft.

MISCELLANEOUS WILDCATS

TEXAS

AUSTIN COUNTY

Parmerson & Cafferkey et al's No. 1 W. N. Schlecte, John Fitzgibbons Sur., 1,850 ft. from SE line and 3,100 ft. from NE line of survey ..... Shut down 1,502 ft.

BRAZORIA COUNTY

Cullen & West's No. 1 Nash, Thomas Alsbury Sur. No. 4, 2,600 ft. E and 1,240 ft. S of SW cor. Mrs. R. L. Young 1,483-acre tract ..... Spudded.

The Texas Company's No. 1 Belcher, Manvel, 167 ft. SE of NW line and 223 ft. of NE of SW line, Lot 18, Blk. A, Suburban Gardens Subd. ..... Drlg. hard sand and lime 3,980 ft.

United North & South Oil Co.'s No. 1 Daisy B. Lewis, S. F. Austin 5 league, 568 ft. S and 325 ft. E from NW cor. 100-acre tract ..... Drlg. sandy shale 4,287 ft.

United Oil Syndicate's No. 1 Levitt, 900 ft. from W line and 400 ft. from S line of John Peske Sur. ..... Rig.

BURLESON COUNTY

Reynolds Oil Co.'s No. 1 Harris, 500 ft. from W line and 400 ft. from N line of J. M. McKean Sur. ..... Shut down 400 ft.

Marts et al's No. 1 W. H. Boyett, W. McWilliams Sur., 3,168 ft. N of N cor. of City National Bank 208-acre tract and 300 ft. SE of NW line of Boyett tract.. Location.

J. E. Stubblefield's No. 1 J. B. Mitchell, 81 ft. SW and 4,340 ft. SE of S cor. of Joseph Henson Sur., in A. T. Woolridge Sur. ..... Shut down 518 ft.

FORT BEND COUNTY

Cullen & West and Gulf Prod. Co.'s No. 1 A. P. George, J. Rabb Sur., 300 ft. S and 305 ft. E of NW cor. A. P. George 519-acre tract ..... Gumbo 136 ft.; cmtd. 12½-in. csg.

GRIMES COUNTY

Rianjo Oil Co.'s No. 2 Cuthrell, Pat B. O'Connor Sur., C of 110-acre tract ..... Derrick.

HARDIN COUNTY

Plummer & McDaniel's No. 1 T. S. Reed, 2,500 ft. from W line and 500 ft. from N line of T.&N.O. Sur. No. 396 ..... Shut down in gumbo and lime 1,326 ft.

D. O. Speight's No. 1 Guedry, 4 miles S of Batson ..... Drlg. sand 3,877 ft.

HARRIS COUNTY

Hattie Baldwin's No. 1 Krahn, 250 ft. out of NW cor. L. Finn Sur. ..... Shut down 492 ft.

Givens & Daybault's No. 1 Lobit, David Middleton Sur., Blk. 19, Lobit Subd. ..... Drlg. clay 60 ft.

Humble Oil & Ref. Co.'s No. 5 Minnetex, Mykawa, 150 ft. from S line and 200 ft. from W line, Lot 261, Wm. Lovett Sur. ..... Location.

Humble Oil & Ref. Co.'s No. 6 Minnetex, Mykawa, Wm. Lovett Sur., C of Lot 254 ..... Total depth 5,899 ft.; fishing.

J. P. Hunnicutt's No. 1 Haney, T. Pitching Sur., 150 ft. out of NE cor. of Geo. E. Haney 730-ac. tract ..... Location.

JACKSON COUNTY

Chicago-Gulf Co.'s No. 1 Rogers (workover) ..... Comp. estimated 25,000,000 ft. dry gas, 1,530 lbs. pressure, 3,952 ft.

Francitas Oil & Land Co.'s No. 1 Thrull, 3,260 ft. SW of N cor., P. Green Sur., 540 ft. SE of E bank Carancahua Creek ..... Derrick.

LIBERTY COUNTY

J. R. Ingram's No. 1 C. T. Palmer, James Fenner Sur., 1,000 ft. from W line and 850 ft. from S line of tract.. Drlg. shale 1,456 ft.

Hamm et al's No. 1 Harvard, Davis Hill ..... Gumbo 1,015 ft.; shut down.

Tucker et al's No. 1 Bell, H.&T.C. Sur. No. 4 ..... Drlg. sticky shale 2,665 ft.

MATAGORDA COUNTY

H. C. Cockburn's No. 2 Hawkins, Shepherds Mott, 4,810 ft. SE along SW line of Farnum Fry Sur., thence 240 ft. NE at right angles ..... Heaving shale 5,034 ft.; drill stem stuck.

MONTGOMERY COUNTY

Price & Wilhite's No. 2 Juerges ..... Drlg. salt water sand 4,660 ft.

ORANGE COUNTY

Altex Oil Co.'s (Veteran Oil Co.) No. 1 Reed, A. Nelson Sur. No. 1, 500 ft. from N line and 250 ft. from E line of tract ..... Formerly temporarily abnd. 4,603 ft.; sidetracked hole 1,200 ft.; drilled to 1,320 ft.; shut down.

Crew Oil Co.'s No. 1-A Mansfield, 50 ft. E of No. 1 ..... Shut down in water sand 1,375 ft.

POLK COUNTY

Freeman et al's No. 2 Freeman ..... Shut down 3,124 ft.

T. B. Hoffer's No. 1 Saner-Ragly Lbr. Co., 300 ft. out of most northerly cor. of most easterly County School Land Abst. 371 ..... Derrick.

Sunshine Oil Co.'s No. 1 Oliver, A. Viesca Sur., 600 ft. NE along SE line from S or SW cor. of 50-acre tract and thence 200 ft. NW at right angles ..... Location.

REFUGIO COUNTY

Blanco Creek Oil Co.'s No. 1 Damaan, 150 ft. from N line and 150 ft. from W line of Blk. 16, Bonnie View Ranch Subd. ..... Standing 4,263 ft.

Humble Oil & Ref. Co.'s No. 1 O'Connor, John Keating Sur., 6,012 ft. S from NE cor. along SE line of Lon T. Rios Sur., thence 7,375 ft. W at right angles in John Keating Sur. ..... Moving in rig.

SAN JACINTO COUNTY

E. P. Edward et al's No. 1 Bennett, northwest of Cold Springs ..... Spudded and shut down.

TYLER COUNTY

King Oil Co.'s No. 1 Caswell ..... Sand and shale showing oil 1,255 ft.; cmtd. 6-in. csg. 1,218 ft.

Allied Pet. Co.'s (Texas Southern Pet. Co.'s) No. 2 Wilson, Mrs. E. Cherry Sur. No. 798, 1,500 varas from W line and 600 varas from N line ..... Total depth 4,958 ft.; reaming to bottom.

VICTORIA COUNTY

Houston Oil Co.'s No. 1 Conrad, T.&N.O. Sur. No. 1, 1,100 ft. from SW line and 100 ft. from NW line .... Trying to make drill stem test 4,-215 ft.

Simpson-Fell and Westheimer et al's No. 1 Levi, 2,200 ft. from SW line and 2,000 ft. from NW line of S.A.&M.G. Sur. No. 4 ..... Drlg. sand 5,354 ft.

T. B. Slick estate's No. 1 McFaddin, 17,700 ft. NE along SE line from S cor. of J. Vairan Sur. and thence 5,050 ft. NW at right angles ..... Total depth 3,529 ft.; plugging back to 3,212 ft.

The Texas Company's No. 3 McFaddin, S 15° W, 6,200 ft. and N 75° W 1,850 ft. out of NE cor. John M. Rine Sur. ..... Drlg. sand and shale 2,103 ft.

United Prod. Corp.'s No. 4-A McFaddin, M. Travisea Sur., 1,320 ft. W along N line of C. L. Mann Sur. from NE cor. and 1,980 ft. N at right angles ..... Sand showing gas 3,752-62 ft.; drlg out 6⅝-in. plug 3,714 ft.

WALLER COUNTY

McDaniel and associates' No. 1 Citizens State Bank, B.B.B.&C. Sur., C of 150-acre tract ..... Rig.

WASHINGTON COUNTY

Joe Baker et al's No. 1 Kramer, Brenham, 600 ft. S and 300 ft. W NE cor. 92 acres ..... Drlg. shale 3,423 ft.

Cord Oil Co.'s No. 1-A Hahn, 500 ft. from N line and 1,852 ft. from W line of J. H. Alcorn Sur., Abst. 3... No report.

Fisher and associates' No. 1 H. F. Scholtz, S. F. Austin Sur., 1,100 ft. NW along NE line from SE cor. of 107-acre tract and thence 12 ft. SW at right angles.. Shut down 390 ft.

Penn-Tex. Oil Co.'s No. 2 Kamas Brenham, S. M. Williams Sur. ..... Shut down for water 3,140 ft.

Yequa Oil Co.' s No. 1 Graves, S. Clampit Sur., 200 ft. from N line and 900 ft. from W line 111-acre tract.. Shut down in hard shale 2,565 ft.

SOUTH LOUISIANA

CALCASIEU PARISH

Crawford Doyle's No. 1 Johnson, Sec. 23-9s-13w ..... Shut down 875 ft.

J. O. Davis' No. 1 Industrial, Sec. 29-9s-10w ..... Standing 6,568 ft.

Wilfred Lahay's No. 1 Jardell, Sec. 16-10s-12w ..... Shut down 3,258 ft.

Dr. Thomas et al's No. 1 John Hewitt ..... Location.

Vacuum Oil Co.'s No. 1 Walt (D.D.), 225 ft. out of SE cor. Sec. 12-9s-7w ..... Sand showing oil 6,961-79 ft.; cmtd. 1 jt. screen and full string of 7-in. csg.

CAMERON PARISH

Vacuum Oil Co.'s No. 2 Cameron Meadows, 3,120 ft. S and 1,900 ft. W from NE cor. Sec. 21-14s-9w (500 ft. S No. 1) ..... Trying to pull stuck drill stem 4,312 ft.

The Texas Company's No. 7 State, Calcasieu Lake ..... Location.

IBERIA PARISH

Jefferson Lake Oil Co.'s No. 18 Lake Peigneur, Jefferson Island, Sec. 58-12s-5e, 300 ft. E No. 5..... Abnd. in cap rock 687 ft.

Jefferson Lake Oil Co.'s No. 19 Lake Peigneur, Sec. 58-12s-5e, 300 ft. from No. 5 in line with Nos. 5 and 18 ..... Drlg. cap rock 625 ft.

IBERVILLE PARISH

Standard Oil Co.'s No. 1 Myrtle Grove-Wilbert, Bayou Choctaw, Sec. 52-9s-11e, 250 ft. W No. 1 Gay ..... Spudded.

Standard Oil Co.'s No. 7 Wilbert, Bayou Blue .....

Standard Oil Co.'s No. 6 Schwing, Bayou Blue, Sec. 73-9s-11e, 317 ft. S of No. 3 ..... Total depth 3,494 ft.; reaming.

Standard Oil Co.'s No. 7 Schwing, Bayou Blue, Sec. 74-9s-10w, N 45°, W 1,800 ft. from No. 5 ..... Total depth 1,350 ft.; sand showing oil 1,307-12 ft.; shut down pending completion No. 6.

PLAQUEMINES PARISH

Humble Oil & Ref. Co.'s No. 2 State, Lake Grand Ecaille, Sec. 14-20s-26e ..... Cmtd. surface csg. 122 ft.

ST. MARTIN PARISH

Federal Pet. Co.'s No. 1 Dangareaux, 11,200 ft. from W line and 50 ft. S of NE cor. of Sec. 140-9s-5e.....Drlg. hard sand 4,420 ft.

TERREBONNE PARISH

The Texas Company's No. 6 State, Caillou Island .....Abnd. in salt 4,574-75 ft.
The Texas Company's No. 1 La.L.&E., Bay St. Elaine ...Total depth 5,683 ft.; hole heaved to 5,620 ft.; trying to blow out.
The Texas Company's No. 2 La.L.&E., Bay Junop .....Location.
The Texas Company's No. 4 La.L.&E., Bay Junop .....Location.
The Texas Company's No. 6 State, Lake Barre .....Salt 3,348-4,001 ft.; sidetracking in sandy shale 2,006 ft.
The Texas Company's No. 10 State, Lake Barre .....Location.
The Texas Company's No. 11 State, Lake Barre .....Spudded.
The Texas Company's No. 12 State, Lake Barre .....Location.
The Texas Company's No. 13 State, Lake Barre .....Drlg. hard sand 4,282 ft.
The Texas Company's No. 14 State, Lake Barre .....Location.

VERMILLION PARISH

Pure Oil Co.'s No. 1 Alliance Land, Sec. 34-11s-1w, 2,600 ft. N and 300 ft. E of SW cor. section .....Drlg. sticky shale, sand and lignite 5,363 ft.

WEST FELICIANA PARISH

Putnam Syndicate's No. 2 Como Plantation, Sec. 51-1s-4w. Shale and lime 2,050 ft.; waiting on 8¼-in. csg.

CANADIAN FIELDS

(Continued from Page 48)

vice president, Walter G. Mackay; secretary, T. W. McKee; managing director, William C. Fisher; directors, Harry Grove, Strathmore; C. W. Barber, Cheadle. Model's No. 1 in LSD 8, Section 22-20-3w5, in North Turner Valley, got production in the deep lime in April, 1930, starting at around 90 bbls. a day; it has since increased its production to around 180 bbls. Gravity has dropped from 72° to 54° Be., and as only about 3,500,000 feet of gas is required to produce this, it is practically a flowing well of light crude. Output is contracted to Imperial Oil, Ltd., at a fixed price to October, 1933. The company has increased its Alberta holdings to 2,549 acres, but no additional drilling is contemplated in the immediate future.

Gas Expert Asked

Turner Valley operators through the Oil and Gas Association of Alberta are urging the provincial government to appoint an independent gas expert to supervise gas curtailment in the Turner Valley Field. F. C. Fisher of Mount Vernon, Ohio, has been mentioned as a possible appointee; and it is thought possible representatives of the Royalite and independent companies may be named to act in conjunction with him.

Operations in the Foothills

On the Moose Dome structure, Moose Oils' No. 1, LSD 16, Section 29-22-6w5, is moving in diamond drill equipment to complete the hole which has been standing for some months at 2,835 feet.

On the Moose Mountain structure, Elbow Oils' No. 1, LSD 11, Section 35-22-5w5, is finishing a protracted fishing job at 3,184 feet. Graystone Consolidated's No. 2 Signal Hill, LSD 9, Section 34-23-5w5, is cleaning out and preparing to drill new hole from 4,163 feet.

On the Pincher Creek structure, southern foothills, Alberta Pacific Consolidated's No. 2 Weymarn, LSD 5, Section 7-6-1w5, is drilling at 3,230 feet after cementing against repeated cavings.

Shareholders of Gibraltar Oils, Ltd., at their annual meeting at Calgary recently decided to undertake no further development in the immediate future. Directors elected were: F. A. Elves, J. D. Whetham, Bruce Taylor, Stanley J. Davies, S. J. Helman.

Dr. G. S. Hume of the Geological Survey of Canada with two assistants has recently completed a survey of the Saskatchewan portion of the Ribstone area.

Hudson's Bay Operations

In the Castor area, Hudson's Bay Oil & Gas Co.'s No. 1 Paintearth, LSD 5, Section 27-39-15w4, has resumed drilling after cementing casing in the lime and is making new hole at 4,497 feet. In the Keho Lake area, southern Alberta, Hudson's Bay's No. 1 Keho, LSD 2, Section 17-11-22w4, is standing cemented in the Blairmore-Kootenay at 4,230 feet. Hudson's Bay's No. 1 Highwood, LSD 8, Section 1-18-3w5, on the Highwood structure is pulling casing, after which the crew will resume work at Keho Lake.

Border Fields

In the Taber district, Alberta Pacific Consolidated's No. 1 Cole-Hunter, LSD 3, Section 11-10-17w4, is making new hole at 3,385 feet, some 55 feet below the oil show recently tested. The formation recently changed to limestone in which the test is now drilling.

On the Milk River structure, Commonwealth Petroleums' No. 1, LSD 9, Section 9-3-15w4, is reported shut down in the Devonian limestone at 4,932 feet and may be abandoned at this depth. The test has drilled through about 2,132 feet of the Devonian; some shows of oil and gas have been encountered, but no commercial production. On the Montana end of the Milk River structure Fulton Oil Co. has a test drilling below 200 feet.

Twin River Test

In the Twin River district, Parco Oil Co.'s No. 1 Twin River, LSD 16, Section 34-1-20w4, is reported drilling below 200 feet, after making first water shutoff around 100 feet. This is the first commercial test undertaken by Parco Oil Co. in Alberta.

Red Coulee Field

On the northwest extension of the Red Coulee Field, Dalco Oil & Gas Co.'s No. 2, LSD 7, Section 19-2-17w4, is reported drilling at 3,150 feet. In the main field, Southern Alberta Exploration Co.'s No. 2, Section 2-1-16w4, is pulling casing after drilling to 2,600 feet without commercial production. A further drop of 25 cents a barrel, bring Red Coulee crude to 85 cents, has tended to slow up prospective new drilling, though the wells already drilled are maintaining an aggregate around 200 bbls. a day.

Test in Manitoba

In southwestern Manitoba, Commonwealth Petroleums' No. 2, LSD 2, Section 26-2-9WPM, is drilling close to the gas horizon at 700 feet after cementing casing at 645 feet.

British Columbia Tests

In the Sage Creek district, British Columbia Oil & Gas Co.'s No. 1 is reported resuming around 1,215 feet after a long shutdown. At this depth the drill is working in a fractured limestone with some shows of light crude.

Following the recent action of the British Columbia provincial government in closing the Cariboo district to general filing for oil and gas rights, a proposal has been made that the government finance a test for oil on the acreage reserved. Some drilling has already been done by private interests and the Patrick Syndicate test near Australian which has been carried to about 912 feet recently got encouraging shows of oil and gas.

ONTARIO

In the Haldimand-Norfolk area, Union Natural Gas Co.'s No. 204, SW, Lot 23, Concession 7, Walpole Township, Haldimand County, has finished with a gas production of 114,000 feet a day.

In Kent County, F. H. Stover & Son's wildcat test in Harwich Township west of McKay's Corners is drilling at 1,575 feet, after going through salt from 1,380 to 1,550 feet.

Farther east, in the old Tilbury Field, Joe Hussey's test near Fletcher has finished a dry hole below 1,400 feet.

Important New Test

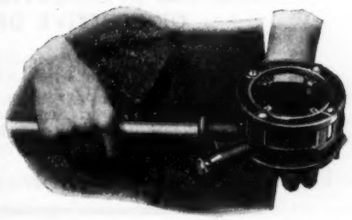
An important new test is being started in Raleigh Township, Kent County, north of the D'Clute Field, as a result of arrangements recently completed between Union Natural Gas Co. and the Olga Oil & Gas Co. Olga Oil & Gas Co.'s No. 1 has been spotted in SW, Lot 20, Concession 8, and will be drilled under supervision of the Union Natural Gas Co. with Kiser Brothers of Chatham handling the contract. The location is 6 miles north of the nearest producer in the D'Clute

A NEW "TOLEDO"

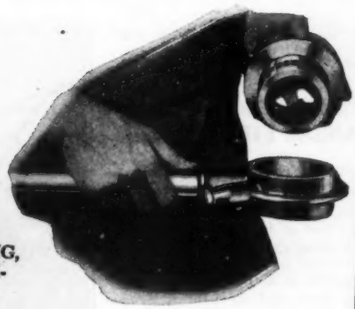
THE NEW "TOLEDO" No. 12 THREADS 1-2 TO 2 INCH PIPE PERFECTLY.

This new "TOLEDO" threader is of the handy ratchet type for close quarter work and a separate die head for each size of pipe permitting instant die change and assuring perfect standard threads.

The New "TOLEDO" No. 12 is the ideal tool for threading brass pipe. It may be ordered equipped with special brass plated die head covers at no additional charge. Special bolt die heads and dies can be supplied for threading 1", 1⅛", and 1¼" bolts. Also a special die head for threading ⅜" pipe. You need this handy new "TOLEDO".



FULL CHIP CLEARANCE, STRONGLY BUILT DIE HEADS



EXTRA LARGE RATCHET BEARING, LONG, UNBREAKABLE HANDLE

THE TOLEDO PIPE THREADING MACHINE CO.
TOLEDO, OHIO

"TOLEDO"

Field and in a general north and east direction from the Tilbury Field. Union Natural Gas Co. is also taking the production of Olga Oil & Gas Co.'s No. 4 well in Dover Township, Kent County. This test some years ago got a fair gas production in the Trenton limestone, and has since been shut in.

Ajax Oil & Gas Co. of Toronto has increased its holdings in the Norfolk gas field to 35,000 acres and may drill one or more tests in this area. The company is continuing the development of its holdings on the Six Nations Indian Reserve near Brantford where it now has 19 shallow gassers.

LA.-ARK. FIELDS

(Continued from Page 46)

None of the other wildcats in Arkansas are making much progress, most of them being shut down. The only active drilling well in the proven area is Wilson & Chapman's No. 1 Adkins, Section 3-18-13, which is bailing to test with 10 feet of sand at 3,610 feet. One new location was reported for this State, the Ozark Natural Gas Co.'s No. 1 E. O. Girard, Section 34-8-30, in Sebastian County.

Daily Average Production

A decrease of 1,865 bbls. was reported for the North Louisiana and Arkansas Fields for the week. This makes a net decrease of 5,700 bbls. daily for the past month. The Bellevue and Cotton Valley Fields are practically shut down, the former producing only 20 bbls. and the latter 510 bbls. as compared with 1,800 bbls. a few weeks ago. Daily average runs for the several pools were:

NORTH LOUISIANA	
Caddo, light	6,985
Caddo, heavy	2,670
Homer	3,065
Haynesville	5,220
DeSoto and Red River	2,515
Elm Grove	465
Bellevue	20
Cotton Valley	510
Urania	4,040
Pleasant Hill	330
Sarepta-Carterville	990
Zwolle	6,450
Holly	480
Total North Louisiana	33,770
Total previous week	35,195
Decrease	1,425
ARKANSAS	
El Dorado	3,510
Smackover, light	4,010
Smackover, heavy	28,870
Stephens	690
Nevada	1,240
Lisbon	690
Champagnolle	2,565
Urbana	1,900
Total Arkansas	43,475
Total previous week	43,915
Decrease	440
Total both states	77,245
Total previous week	79,110
Decrease	1,865

Note—Last week Elm Grove with 470 bbls. per day was omitted, no report having been received from that field. Bellevue should have been listed at 140 bbls. and not 470 bbls. The totals of the two weeks as listed above are correct.

KANSAS FIELDS

(Continued from Page 42)

at this time the pool had a potential of 75,000 bbls. a day.

The wildcat test of Keys Brothers and others, No. 1 Gregory, SW cor. Section 23-16-9w, a wildcat in Ellsworth County, was spudding. It is being drilled along the Ellsworth Arch and the nearest producing well is the Alywards and others' No. 1 Stratman, SE cor. NW SE Section 1-17-10w, which is shut in with no pipe line connection. It is estimated to be a 2,000-bbl. well.

Another gas well was completed in the Haury Pool, in Reno County, during the week. Tom Palmer and Phillips Petroleum Co.'s No. 1 Goering, NW cor. SE Section 1-23-4w, made 21,500,000 feet of gas a day from the chat at 3,301-50 feet. Harris & Haun's No. 1 Esau, NE cor. SE Section 12-22-4w, was spudding. It is located north of the production in the Haury Pool. Study & Turner and others' No. 1 Goering, SE cor. NE NW Section 1-23-4w, found a hole full of water at 2,924 feet and landed the 6-inch casing at 2,927 feet.

The wildcat test of the Solar Oil Co.'s No. 1 Zink, SE cor. NW Section 3-19-10w, Rice County, fond a hole full of water in the Silicious lime at 3,335-38 feet. The well is located about a mile and a half from the nearest production.

Cowley County

Gralapp and others' No. 1 Pierce, C SW SE, Section 32-32-5, has been completed for 150,000 feet of gas in sand 630-40 feet. Wilburn and others' No. 1 McCullum, NW cor. NE, Section 13-33-4, made 500,000 feet of gas from sand 637-70 feet.

Elk County

Denton and others' No. 1 Donnell, C NW SE, Section 12-30-9, is spudding.

McPherson County

Wolf Creek Oil Co. and others' No. 1 McMurry, NE cor., Section 1-20-2w, is moving in. Olson Drilling Co. and others' No. 2 Koehn, NE cor. SW SE, Section 36-19-2w, swabbed 966 bbls. in 12 hours from Viola lime 3,390-3,410 feet. Harris & Haun and others' No. 1 Overman, NW cor. NE SE, Section 20-19-1w, made 28,892,000 feet of gas from chat 2,925-70 feet. Helmerick & Payne's No. 2 Koeh, NE cor. SE, Section 12-20-2w, has been completed for 60 bbls. in chat 2,932-78 feet.

Rice County

Hipple & Rogers' No. 1 Rainey, NW cor. SE, Section 3-21-6w, has been deepened from 3,404 feet to 3,450 feet and then plugged back to 3,402 feet where it pumped 900 bbls.

Sedgwick County

Gypsy Oil Co.'s No. 3 Hamant, SW cor. NW SW, Section 14-26-2, has been completed for 115 bbls. in sand 3,315-27 feet. Derby Oil Co.'s No. 6 Eastborough, CEL SE NW NE, Section 19-27-2, has been completed for 96 bbls. in chat 2,987-90 feet.

Stevens County

Texas Interstate Pipe Line Co. and others' No. 1 Gregory, C NE, Section 13-33-39w, gauged 12,481,000 feet of gas producing from sand 2,588-2,690 feet.

FACTORS IN SELECTION OF POSITIVE DRIVES

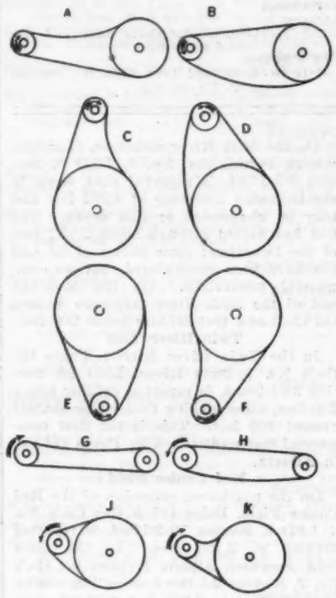
(Continued from Page 52)

ciency, and ability to withstand severe shocks, are distinct advantages of this type of speed reducer. Space conservation is another item of great importance and makes this type of positive drive medium popular.

Ratios up to 300 to 1 are available. Selection of the proper type of reducer is facilitated by knowing the amount of horsepower per revolution of the driven machine, which can be figured by the formula:

$$\text{H.P.} = \frac{\text{Total horsepower}}{\text{R.P.M. of driven machine}}$$

In connection with the reducer is the advantage of the Sykes herringbone



tooth form, described under "Herringbone Gears."

Herringbone Gears

Herringbone gears with Sykes tooth form generated teeth of the involute type provide the ultimate in smooth operation. Such gears, having true continuous teeth, without center gap, are the strongest for a given face width. This type of gear has these advantages:

There are more teeth in contact for a given pitch, where overlap occurs.

The actual contact face is greater than the actual gear face.

They are structurally stronger.

Their action is continuous.

Their operation is quiet.

They are more durable.

True involute profile is maintained throughout their life, keeping efficiency constant.

Pinions will not undercut.

They will operate at higher speeds with more quiet and greater efficiency than other gears.

They develop more horsepower for a given size.

They permit greater ratios for given center distances.

Herringbone gears are particularly suited for such heavy duty service conditions as driving elevators, drums, oil field pumping equipment and machinery in steel plants, foundries, power plants, saw mills, etc.

Positive Variable Speed Transmissions

At times there is a need for a variation in speed of the driven shaft, and for the positive variable action a totally enclosed, chain driven variable speed transmission will give the most efficient service.

Installations in many industries, where absolute control is important, have found this type of transmission has solved their previous variable speed difficulties.

Malleable Iron and Steel Chains

For positive slow speed transmission there are a number of cast chains and heavy steel chains that will give rugged heavy duty service. An unbiased engineer, or manufacturer's representative can often give advice of value.

SOUTHWEST TEXAS FIELDS

(Continued from Page 44)

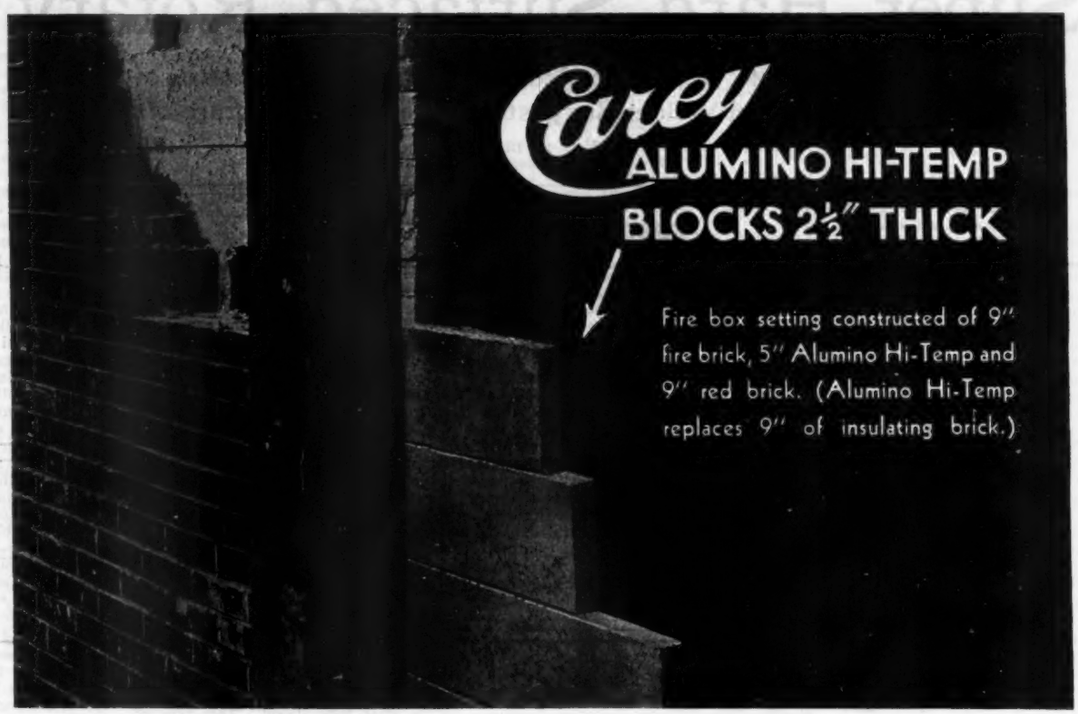
feet and each carried enough oil to make a little well. The operators will carry the test to 4,600 feet unless they get production before that.

Along the Balcones fault Walton's No. 1 Zoboroski in Guadalupe County is still in the chalk and a small well and it has not been decided whether to deepen it or complete it there. Other tests have marked time. Rayor's No. 1 Dunlop, northwest of the city of Luling in Caldwell, is flowing by heads a small amount of oil. It is producing from the Edwards lime.

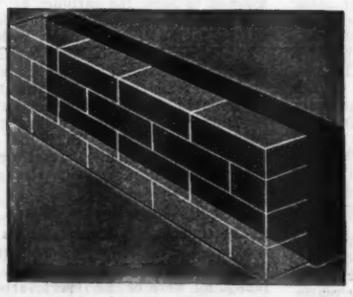
JAMES E. STACEY DEAD

James E. Stacey, 74, former head of the Stacey Engineering Co., which combined with the International Derrick & Equipment Co. to form the International-Stacey Corp., died recently in his home in Wyoming, a suburb of Cincinnati, Ohio. Mr. Stacey had been active in the manufacturing and public utilities fields more than 50 years after entering the Stacey Manufacturing Co., founded by his father.

COATING A PIPE LINE TO PROTECT IT AGAINST CORROSION


Carey
ALUMINO HI-TEMP
BLOCKS 2½" THICK
Fire box setting constructed of 9" fire brick, 5" Alumino Hi-Temp and 9" red brick. (Alumino Hi-Temp replaces 9" of insulating brick.)

4 ADVANTAGES of ALUMINO HI-TEMP Insulating Blocks



Phantom view illustrating comparative sizes of Carey Alumino Hi-Temp and ordinary insulating brick. One Carey Alumino Hi-Temp Block (2-½" thick, 9" high, 36" long) equals in area 14-½ ordinary insulating brick laid as shown.

1 Unbiased tests prove that Alumino Hi-Temp Insulating Blocks cut heat losses over one-half as compared with standard insulating brick of equal thickness. We will gladly supply copies of these tests.

2 Alumino Hi-Temp Blocks are 9"x36" in size; one block replaces over fourteen insulating brick 2-½"x9", thus reducing installation labor.

3 Because of the larger units, an Alumino Hi-Temp wall has about one-fourth the joint area of an insulating brick wall; heat is lost most readily through the joints in any insulation.

4 Five inches of Alumino Hi-Temp Insulating Block equals 9" to 11" of insulating brick in efficiency. The resulting space saving is frequently very desirable.

Carey Alumino Hi-Temp Blocks are the modern insulation for refinery fire box settings or furnaces with internal temperatures of 2500° F. to 3000° F. Samples, copies of tests and complete data will be supplied on request.

THE PHILIP CAREY COMPANY ✕ Lockland, Cincinnati, Ohio
Branches in Principal Cities

BUILT-UP ROOFS
ASPHALT PRODUCTS
ELASTITE EXPANSION JOINT
WATERPROOFINGS
ROOF PAINTS

Carey PRODUCTS

HEAT INSULATIONS
ASBESTOS MATERIALS
CAREYSTONE CORRUGATED SIDING
ASFALTSLATE SHINGLES
BUILDING PAPERS

549

Super Hard Surfaced Rotary Bits

Code of Recommended Practice for Guidance of Bit Smith and Welder Suggested. Effects on Structure of Steel

By Blaine B. Wescott
Gulf Companies, Pittsburgh, Pa.*

FURTHER INVESTIGATION REQUIRED

The commercial development of super-hard facing materials has been exceedingly rapid, and marked economies in drilling have resulted from their use. The manufacture of sintered carbides preceded and made possible the utilization of fused carbides which are almost universally employed for drilling. The methods of manufacture, chemical composition, and physical properties of both types of carbides are briefly discussed.

The effects of hard facing on the steel of bits are shown to be detrimental, and the desirability of normalizing or heat treatment of the bits after hard facing is shown. Plain 0.45 per cent carbon steel has been almost universally recommended for hard facing, but reasons are advanced for the adoption of pearlitic manganese steel which can be sufficiently regenerated by a simple normalizing treatment to furnish the desired support for the facing. No matter what grade of steel is used in the bits, normalizing is recommended after facing operations rather than full heat treatment.

Several aspects that require further investigations are pointed out, and a code of recommended practice for the guidance of the bit smith and welder is suggested.

The application of tungsten carbide facings to rotary drilling bits has deservedly received almost universal acceptance by the oil industry in the short space of but little over two years. Although there are many brands and several types of the so-called superhard materials, ranging in size from the relatively large pieces used as inserts, through the gradations of granules used in metal-sheathed tubes down to powders that provide a continuous cutting edge, nearly all are composed of fused tungsten carbides. Their development received its impetus from the perfection of cemented tungsten carbides for tipping machine tools in Germany. The wholly exorbitant cost of the latter prevented their use on drilling bits, but the readily apparent advantages in the allied field of metal cutting supplied the incentive needed for the adaptation of the moderately cheap fused products to rock cutting. The economies which have been realized by their use are so generally appreciated that they no longer require enumeration.

As is often the case where growth is rapid, there has been but slight opportunity for investigation of many of the details connected with their application to bits which undoubtedly have considerable bearing on the subsequent service rendered. That these informational deficiencies are recognized is attested by the following problem which has been assigned to the committee on metallurgy of oil field equipment.

Data Required

1. What optimum composition and initial and final heat treatment of bit steel best adapts it to be faced with hard surfacing metal?

2. Develop a code of recommended field practice for the bit smith and welder.

The responsibility for the assemblage of such data should be voluntarily and jointly assumed by the manufacturers of bits and facing materials, but there has been little manifestation by them of a disposition to systematically investigate the subject. While it is quite probable that the final opinions may be based on the results of carefully controlled and observed field tests, the present problem is readily susceptible to laboratory solution. In actual drilling operations, even in cored formations, there are many variable conditions that cannot be entirely controlled or evaluated, which tend to obscure the results so that trustworthy data can only be obtained from the averages of many tests. On the other hand, the problem as stated can be largely solved by the application of well established metallurgical principles supplemented by comparatively simple and inexpensive experimental work. The present paper is offered for the purpose of suggesting the type of information that will aid the committee in their investigation and enable the driller to obtain the greatest footage of hole per bit.

Nature of Tungsten Carbides

There are two general classes of tungsten carbides in commercial use today, the sintered carbides used in the machine tool industry and the fused carbides used for drilling, scarifying, and other similar purposes. The cost of the sintered carbides is about 20 times that of the fused carbides, and for that reason it has not been economical to use them in drilling operations. However, field tests in core drilling have been made with favorable results, and it appears probable that they will be employed for rock cutting in the not distant future.

The first published reference to tungsten carbide is attributed to Moissan in 1896. For many years after its discovery it remained a scientific curiosity of no practical value, and of but slight interest, until the necessity arose in the electric lamp industry for wire drawing dies able to withstand the exceedingly severe service engendered in the manufacture of metallic tungsten filaments. Because of their great brittleness the early attempts, made as far back as 1915, to utilize tungsten carbides commercially were unsuccessful. After several years of experimentation, dies were finally made successfully by sintering the powdered carbides with small amounts of another metal acting as a binder or cementing material. Among others, iron, nickel and cobalt were used for this purpose.

The commercial applications which were envisioned by this first success resulted in extensive studies of the tungsten-carbon system. Ruff and Wunsch reported the existence of three tungsten carbides having the formulae W_2C, W_3C, and WC, containing 2.12 per cent, 3.16 per cent, and 6.12 per cent carbon, respectively. They also postulated the possibility of three eutectics, the first at about 1.4 per cent carbon, between tungsten and the lowest carbide (W_2C); the second containing about 2.4 per cent carbon, and consisting of the three carbides; and the third at about 3.5 per cent carbon, consisting of the two higher carbides (W_2C) and (WC). Later investigations have disproved the existence of the lowest carbide W_2C.

Summary of Sykes Study

A very complete study of the system has been published by Sykes, and may be summarized as follows: The first eutectic melts at about 4,485° F., has a composition close to 1.5 per cent carbon, and appears to consist of tungsten and tungstous carbide (W_2C, 3.16 per cent carbon, melting at about 4,900° F.); the second eutectic, melting at about 4,575° F., has a carbon content of approximately 4.5 per cent, and consists of tungstous carbide and tungstic carbide (WC, 6.12 per cent carbon); the latter begins to decompose into tungsten and graphite at about 4,710° F.

The two carbides can be readily identified microscopically, since alkaline ferricyanide etches tungstic carbide and not tungstous carbide, while a cold mixture of concentrated nitric and hydrofluoric acids etches tungstous and not tungstic carbide.

The sintered carbides do not generally possess a definitely crystalline structure; they are composed of a fine conglomerate of the two carbides held together by the cementing metal added.

A modified form of fused carbides has come into use in which the carbide is formed from powdered tungsten and carbon simultaneously with the application to the steel being faced. This type of superhard facing must be applied by the electric arc welding method.

Most Important Properties

The most important properties of tungsten carbides for bit facing are the closely interrelated ones of hardness, resistance to abrasion, compressive strength and resistance to impact—all more or less influenced by the composition and method of manufacture. There has been much advertising of a deliberately misleading nature in regard to the hardness of tungsten carbides. All of them, without exception, can be readily ground or lapped with carborundum or boron carbide, and can be polished with ordinary polishing agents. For these reasons it may be assumed that their hardness on Moh's scale of mineral hardness is between 9.0 and 9.5. Hardness is usually determined with a Rockwell tester using the "A" or "no load" scale. These values can then be translated into Brinell numbers; hardness measured in this manner varies between 1,200 and 2,500 Brinell. The hardness of tungsten carbide facings is inversely proportional to the quantity of cementing material present and the amount of steel adsorbed in the facing operations. Additional layers become increasingly harder as the thickness of the deposit increases and the dilution with steel decreases. Compressive strength and impact resistance increase as the quantity of cementing material increases, but decrease as the hardness increases. Abrasion resistance, on the other hand, increases with hardness and decreases with increasing amounts of cementing material. All of these properties can be varied within certain limits quite readily, and it is important to determine just what the optimum combination of properties is for drilling. Fused carbides have a compressive strength ranging from 100,000 to 200,000 pounds per square inch; sintered carbides frequently have a compressive strength in excess of 500,000 pounds per square inch. Abrasion resistance can only be expressed in relative terms, and has but slight significance unless the conditions closely approximate those of actual service. For most economical results, hard facings should have the greatest hardness attainable without a detrimental influence on their ability to resist shocks and chattering incidental to drilling operations.

Methods of Manufacture

The starting point in the manufacture of sintered carbides is pure tungsten powder produced by ordinary refining methods from tungsten ores. The finely powdered metal is carburized either by passing the powder through a furnace containing a carbonaceous gas or by heating it with finely powdered carbon in an atmosphere of hydrogen. Tungstic carbide (WC) is the result of this operation. The powdered tungstic carbide is then ground in a ball mill with the requisite quantity of powdered cobalt, which coats the particles of carbide. The mixture is next compressed in a steel die into conveniently shaped billets and heated in hydrogen to a temperature high enough to furnish the cohesion required by subsequent operations. After this presintering treatment, the material is converted into the desired shapes and then sintered at a high, white heat in a hydrogen atmosphere. In this process, the cobalt melts and cements the tungsten carbide particles firmly together. There is an extensive shrinkage of the original porous conglomerate of particles to a dense material without other than microscopic voids. The metallic cement is believed to consist of a eutectic alloy of carbon, tungsten and cobalt.

Various methods, clothed in secrecy, are used for the production of fused carbides. They have been made in regular metal melting electric furnaces of both the induction and arc-resistance type. Because the high melting points of the carbides introduce difficulties in ordinary methods, the most commonly used apparatus consists of a resistor type furnace utilizing a carbon crucible as the resistor and holder for the melt. The crucible is placed between two heavy blocks of carbon to which water cooled electrodes are attached. High-amperage, low-voltage current when passed through the crucible quickly raises the temperature to the melting point of the carbides. Various methods of casting are employed, depending on the type of product desired. Regulation of the current offers a convenient and sufficiently accurate means of controlling the temperature. Tungsten carbide, made in a preliminary operation, can be charged into the crucible, or the metallic tungsten may be allowed to form the carbides by reaction with the carbon crucible. Material made by this method is quite likely to be somewhat nonuniform in composition and structure because of the rapid absorption of carbon from the crucible, and the short duration of the operation, and must be so controlled as to prevent too great an adsorption of carbon which, on cooling, separates as graphite, resulting in a porous product of inferior strength and abrasion resistance.

Application to Bits

The superhard facing materials are offered to the oil industry in a variety of shapes, sizes and combinations. Originally, all were of the insert variety consisting of relatively large, irregularly shaped pieces, which were tacked in place on the bit blades with welding rod, and were then surrounded with wear-resistant alloy. The more recent developments have embodied the use of carbides in granular and powdered forms providing, when deposited, a more nearly continuous cutting edge. It is a question of economic importance to the driller to know whether a bit faced so that it wears evenly over the whole edge will make more hole than one faced in such a manner that it fingers. The present trend may be predicated largely on the lower manufacturing expense of the finer grained materials.

Nearly all of the carbides can be applied by either the oxy-acetylene or electric methods, but there is at least one product that requires the high temperature of the latter for its application. Operating costs of the electric method are less, but this is greatly discounted

*Before Division of Production, American Petroleum Institute, Dallas, Tex.

by the greater initial investment and higher depreciation costs of electrical welding equipment. In any event, the cost of application should not be allowed to dictate the method selected until the influences of several factors have been definitely established. It has been stated that overlays applied by the electric arc method are harder and more likely to check if subsequently heat-treated, and possibly differ from gas-deposited facings in their ability to resist abrasion. It is also believed by some observers that the high temperature of the arc method induces internal stresses in the carbide particles sufficient to cause excessive cracking and chipping in service, and that the absence of nonoxidizing gases tends to cause surface decomposition of the carbide particles. All of these questions are important, and require solution; it may be significant that the manufacturers of tungsten carbides are almost unanimous in the recommendation of the oxy-acetylene method with a reducing flame.

The hard facing of bits is a highly specialized application of welding methods, and cannot be satisfactorily carried out by inexperienced operators or haphazard methods. In the formulation of a code of recommended field practice, it is essential to emphasize the importance of providing mountings to support the bit in the proper position. Templates cut to the finished size and clamped to the bit will not only result in better quality of work, but will reduce the time required for facing to a minimum. The danger of checking can be greatly minimized by preheating the bit to a temperature above 600° F.; and, incidentally, the time and quantity of gases or electric power for facing will be effectively decreased.

The matter of the extent or depth of intra-penetration between the steel of the bit and the hard facing requires further investigation. It has not been definitely established whether a bit with a very thin transition zone, in which there is an abrupt change from the tough, relatively soft steel to the brittle and hard facing, will give better service than one on which the facing has been more extensively puddled into the steel and the variation in properties is of a more gradual nature. Conceivably, the latter condition may be better able to withstand subsequent heat treatment.

Selection of Bit Steel

The footage per bit has been so greatly increased by the use of hard facings that very little attention has been given to the selection of the type of bit steel best suited for the purpose. In unfaced bits, the steel is selected for its hardness, toughness, and resistance to abrasion; the grade usually employed contains from 0.60 to 0.70 per cent of carbon, either with or without varying amounts of chromium, nickel, molybdenum or manganese. In bits intended for facing, the steel should be selected primarily to fulfill the function of providing support for the hard facing. In as much as the surfacing and heat treating operations are often carried out in field shops with limited equipment, it is desirable to use a "fool-proof" steel, and the plain carbon steels most nearly approach this classification. It is the consensus of opinion of California operators that 0.45 per cent carbon steel will give the best results in faced bits; this opinion is quite generally shared by the manufacturers of tungsten carbides. With but one exception the principal manufacturers of fish-tail bits apparently have no opinion of any kind, and appear to be wholly uninterested and indifferent.

It is true that a 0.45 per cent carbon steel, in either the normalized or heat-treated condition, is both tough and ductile, but it is not at all certain that this steel possesses the properties desired for the support of hard facings. Mention has been previously made of the extremely abrupt change of properties occurring at the junction of the bit and facing, and of the differences in the coefficients of expansion of the two materials. Hard-surfacing products cannot withstand extensive elastic deformation, and cannot absorb shocks by such deformation; so that the wisdom of supporting the facings with a steel possessing these properties to a high degree is questionable. It would appear more logical to select a steel of greater hardness and lower ductility, in order to provide as rigid and unyielding support as possible.

Affects Structure of Steel

Proceeding somewhat further with this line of reasoning, it will be shown subsequently that the application of the hard surface greatly affects the structure of the steel in the bit. Some sort of heat treatment after facing is necessary to regenerate the proper structure in the bit. Because of this difference in the rates of expansion of the two contacting alloys, there is always the possibility of cracking from heat treatment; and the more drastic the treatment, the greater this possibility becomes. Therefore, a steel which can be properly regenerated by normalizing should give more consistent results than one which requires heat treatment.

Pearlitic manganese steel possesses all of these properties which appear to be desirable for bits intended for hard facing, with the added advantage of low cost. This steel has air hardening properties, and a simple normalizing treatment will impart a sorbitic or granular pearlitic structure and physical properties better suited for surfacing than those obtainable from a 0.45 per cent carbon steel after a full heat treatment consisting of an oil quench and draw. None of the alloy steels suggested for bits can be given comparable properties by anything less than full heat treatment. The advantages of employing an air-hardening steel are more apparent when consideration is given to the difficulties of carrying out heat-treating operations under ordinary oil field conditions. The following specification is suggested for bit steel for hard facing:

Carbon	0.40 to 0.50 per cent
Manganese	1.60 to 1.90 per cent

Effects of Facing on Bit Structure

The physical properties of steel of a given composition are determined by its structure, which in turn is regulated by the heat treatment and mechanical work to which it has been subjected. Fish-tail bits are forged to shape; and, since in this operation they are maintained at elevated temperatures for long periods, the resulting grain structure is coarse, and the steel is relatively brittle and unsuited for severe service. Some bits are sold in this condition, while others are improved by normalizing or heat treatment.

The application of any hard surfacing material by either the electric or oxy-acetylene methods is invariably accompanied by alteration of the structure of the bit to a depth and extent dependent upon the temperature and time of application. There is a decided coarsening of the grains, which may be accompanied in some instances with either carburization or decarburization of the steel at the interface. Whatever the nature of the changes, they react to lessen the effectiveness of the steel as a support for the facing. Therefore, any corrective measure in the form of heat treatment should always be applied after the completion of the facing operations.

Previous to facing, the steel was in the normalized condition, and composite facing rod was applied to one blade with oxy-acetylene and to the other with the electric arc. Both blades were preheated to 650° F. before application of the rod. The change in structure brought about by the gas application was most pronounced, and the structure reverted to the "as forged" condition during the application of the composite rod. The greater and more localized heat of the electric arc is apparent in the structure of the steel, since the original normalized structure was undisturbed a short distance from the interface.

The two blades were then normalized by air cooling from 1,550° F. In both blades the original fine grained structure was regenerated practically to the junction of the steel with the facing rod. No traces of incomplete regeneration remain, and the sorbitic structure extends to the interface. Cracking of both the rod matrix and the carbide particles resulted from quenching.

Conclusions

Although it has been pointed out that data pertaining to several phases of the problem of hard faced bits are insufficiently demonstrated, several conclusions may at least tentatively be formulated as follows:

1. The economies incident to the use of hard surfaced bits are great, even though the development lacks a background of systematic experimentation.

2. Several questions are in urgent need of solution. Most important of these are:

(a) Are facings applied by the oxy-acetylene method better suited for drilling than those applied by the electric arc method?

(b) Should the facings be extensively puddled into the bit or applied with as little alloying as possible?

(c) Are facings which provide a continuous cutting edge superior to those that finger on wearing?

(d) Can hard facings be expected to withstand heat treatment without detrimental cracking?

3. The foregoing questions can best be answered by experimental drilling apparatus, such as several manufacturers now have. There are too many indeterminate variables to allow the solution of the problems by field tests.

4. The application of hard facings coarsens the structure of the steel, so that it is less suited to provide the proper support.

5. Corrective heat treating measures should be applied after hard surfacing. Heat treatment prior to facing is valueless.

6. Normalizing of hard faced bits is less likely to result in cracking of the facing than heat treatment.

7. A partially air hardening manganese steel appears to be better suited for hard facing than plain carbon steel, since only normalizing is required.

The author wishes to acknowledge the helpful co-operation of F. B. Bayless, of the Oil Well Supply Co., in supplying the bit blades used in these experiments; and of E. E. Le Van, of the Haynes Stellite Co., in providing the labor and material used in hard facing the blades. He is further indebted to C. N. Bowers and S. J. Edge, of the Gulf Laboratories, for their aid in the preparation of the micro-sections, and to H. W. Fletcher, chairman of the A.P.I. national metallurgical committee, for the opportunity of presenting this paper.

Recommended Practice

1. In order that bits may be rebuilt and hard-surfaced in a satisfactory manner, it is absolutely essential to provide a holder to support the bit during the operations. To insure perfect flexibility the holder should be so constructed that the bit is gripped by the pin, in a horizontal position, in a clamp or collet that is either free to revolve itself or will allow the bit to be revolved about a horizontal axis. The adjustment of the clamp or collet should be sufficient to accommodate any size of pin, thus making it adaptable for all types of rotary bits.

2. Provide an adequate supply of heavy-gauge copper sheet to serve as forms and templates for rebuilding worn bits. Adoption of this practice will result in time-saving and better quality of workmanship.

3. Never attempt to rebuild a worn bit until all previous hard facing material has been removed. This can best be accomplished by placing the surface to be cleaned in a vertical position and washing the old facing off with the welding flame or arc. Failure to observe this precaution will result in chipping of the new facing applied.

4. Bit surfaces to be hard faced or rebuilt should first be cleaned of dirt and scale by grinding.

5. When applying hard surfacing alloys by the oxy-acetylene method, always use a reducing flame, i.e., a flame with an excess of acetylene. A neutral or oxidizing flame will oxidize the material at the surfaces of contact and result in a poor bond between them. When the electric arc method is used, avoid burning the steel or touching the arc directly to tungsten carbide inserts.

6. When rebuilding or hard-facing a bit, always have the surface being worked upon in a horizontal position.

7. Use high strength welding rod for rebuilding worn bits.

8. In rebuilding or facing a bit, preheat it to a very dull red heat. The source of heat should be applied some distance back of the edge of the bit. A neutral or reducing oxy-acetylene flame may be used if no furnace or forge is available.

9. For rebuilding worn bits, clamp a piece of heavy gauge copper sheet firmly to the under side of the bit face, and outline the shape desired with chalk or soapstone on the copper. If the bit is badly worn out of gauge, the setting of tungsten carbide inserts may be done at the same time as the rebuilding. In this case it is more convenient to work with the cutting face down, placing the inserts in their proper positions and rebuilding the bit around them. Working with copper forms and templates will greatly reduce or entirely eliminate subsequent grinding to gauge.

10. Make certain that the cutting edges are concentric with the axis of the bit. Bits that are not truly centered may drill crooked holes.

11. In mounting tungsten carbide inserts on a bit, melt the steel thoroughly, so that the insert is partially submerged in the bit. Then cover it completely with a thin coating of the tacking rod. The inserts can be picked up and placed in position by heating the end of the tacking rod and touching it to the inserts.

12. Inserts should be protected by a covering layer of abrasion-resistant alloy rod, composite rod or tube metal. The covering layer should be puddled into the steel, just sufficiently to produce a strong bond. Excessive puddling will reduce the abrasion resistance of the facing, and too little puddling will result in subsequent chipping. During this operation all specks of scale and oxide should be floated to the surface to avoid holes in the deposit.

13. After the rebuilding and facing operations have been completed, cool the bit slowly to avoid cracking of the facing.

14. If necessary, grind the face bit to gauge.

15. To normalize the bit, heat the faced end uniformly to 1,550° F. (light cherry color), hold for one-half hour at that temperature, and allow to cool in air.

16. To heat treat the bit, heat the faced end uniformly to 1,550° F. (light cherry color), hold for one-half hour at that temperature, and quench in oil. Never quench in water. Draw the quenched bit by heating to 1,100° F. for one-half hour. Cool in the air.

17. Consult the instructions of the manufacturers for details relating to the particular products being used.

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Chicago Marketers Face a Dilemma

It May Develop That While Tank Car Gasoline Prices Strengthen, Tank Wagon and Service Station Prices May Tumble

By Robert C. Conine

Chicago Bureau, The Oil and Gas Journal, 6 North Michigan Ave.

CHICAGO, July 13.—Uncertainty as to the outcome of recent developments in the crude oil situation prevails in the Chicago district, but this feeling remains in the background, temporarily at least, for two major reasons. First, oil men here are convinced that the drastic crude oil price cuts in Texas and the Mid-Continent represent the most effective argument for curtailment of production, and second, the marketers in the district have an incipient paradox on their hands and are giving it most of their attention.

If this paradox matures, and the marketers are already accepting that eventuality with philosophical calm, the tank car gasoline markets will continue to strengthen in price, while the tank wagon and service station markets will tumble to record breaking lows. This, as every experienced person knows, constitutes a dilemma, between the horns of which may be found the retail marketers and jobbers who must pay more and sell for less.

Blue Gasoline Developments

Standard Oil Co. of Nebraska has introduced Nebraska Blue gasoline in its territory and raised the price of its regular grade 2.35 cents. At Minneapolis and St. Paul Standard Oil Co. of Indiana lowered the Stanolind Blue price at the service station 1.1 cents to 10.9 cents, including tax of 3 cents, and this action was followed by a 2-cent cut to 10 cents in these cities by another important retailer. At Detroit the Stanolind Blue reduction to 8.6 cents was followed by a cut to 8.4 cents by Sunny Service Oil Co., principal cut price marketers of that city. In Chicago the trackage station operators have in some instances answered the reduction of the majors to 7 cents, excluding tax, by dropping their postings to 6 cents plus 3-cent tax. Other cut price operators of Chicago have been more circumspect and are showing a price of 6.9 cents plus tax.

The role of the third grade gasoline as a perpetual menace to trackage station operators who make it a practice to slash prices, has become well defined. As one marketer associated with an important company said: "It must not be forgotten that the major interests did not take action against cut price operators until these cut price operators began to expand their activities and threatened to demoralize the industry. The introduction of the third grade of gasoline was a move to recover gallonage which had been taken from the major companies in a price competition attack on the part of men who were taking advantage of what should have been a difficulty of short duration in the oil industry. Because too large a number of men fell into the error of supposing that competition on a basis of price is as sound as competition on a basis of quality and service, the difficulties of the industry have been prolonged and made vastly worse.

Majors Decline Aggressive Policy

"While it is evident that the larger companies are justified in resenting the activities of proration breakers in production, of nonconforming refiners, of market disrupting distributors, and of trackage station operators who apparently defy all laws of arithmetic, the major companies have not been the aggressive parties in the price wars, but have been content to follow every reduction posted by the cut price marketers.

"The trackage station operator is to learn that no matter when or where he decides to carry on competition on a price basis, there will be a major company offering gasoline as good or better than his own at any price he chooses."

Blue Inroads on Regular Grades

During the prevailing warm weather the third grade gasoline has been found very efficient except in the matter of "pick up" where it suffers by comparison with the grades having better initial and antiknock rating. The popularity of the third grade gasoline in Chicago and Milwaukee is indicated in the sales of a representative company. This company is selling 16 per cent is much "blue" as regular and Ethyl combined. The third grade gasoline sales of another company have reached a fourth of the sales of second grade gasoline.

Interest in Antiknock Growing

While the gasoline price war is principally confined to the marketing of 58-60, 437 endpoint gasoline of about 54 octane number or less, there is a less pronounced movement to offer premium grades of gasoline at the trackage stations at prices below Ethyl, which is 17 cents in Chicago, including 3-cent tax. This premium grade of gasoline boasts of an octane number of 72 to 74, and has an endpoint ranging from 390 to 398. Some of the trackage stations actually have a premium grade, a regular grade and a third grade, with prices, respectively, of 15.5 cents, 12.5 cents, and 9.9 cents, including 3-cent tax.

Several refiners are seriously considering making extensive additions to their cracking facilities, while other refiners have decreased their crude oil runs to stills while increasing their production of cracked gasoline from distillates and fuel oil. One refiner is cracking residua from his Cross units and even tar bottoms.

The tank car markets, however, show a light movement in all the gasolines with the exception of U. S. Motor. Tank car prices on naphtha and gasoline at the close of last week showed additional strength in all the grades. Jobbers were taking material out on their contracts in large volume, and while buying continued at a good pace, it was evident that the jobbers were not especially impressed nor enthusiastic.

Buyers have evidently assured themselves of a fair supply of gasoline for July, at least, although it is impossible to ascertain the approximate gasoline stocks held in storage here by distributors. There is also a view of the tank car market rise in the example of this representative buyer: This company bought 250 cars of gasoline for re-sale during July. The first 25 cars were bought at 2 cents. The second purchase was of 75 cars at 2⅛ cents. The third purchase was of 75 cars at 2¼ cents, and the fourth purchase was of 75 cars at 2⅜ cents. Prices to the jobbers at the close of last week were: 58-60, 437 endpoint (U. S. Motor), 2¾ cents to 3 cents; 60-62, 400 endpoint, 2⅞ cents to 3⅛ cents; 64-66, 375 endpoint, 3¼ cents to 3⅜ cents; 64-66, 437 endpoint, blend, 2¼ cents to 2⅜ cents; and 68-70, 360 endpoint, 3¼ cents to 3½ cents. The 50-52, 450 endpoint naphtha was 2⅜ cents to 2⅝ cents, while the 56-58, 450 endpoint naphtha was an eighth of a cent lower.

May Step Up Refinery Runs

Increasing tank car market prices may have the effect of cutting short the buying policy which has been adopted by practically all of the larger refiners, it is intimated here. Just a fraction of a cent, one refiner said, in the tank car price restores the profit to refinery operations, and with crude oil down to lows of 6 cents and 10 cents, a boost in crude oil runs to stills may be expected. One refiner pointed out that in respect to the small refiner who has been buying crude oil considerably under the market, or who has formed a working agreement with the producer whereby the producer takes a specified share in the profits at the refinery, the recent crude oil price cuts will have no more significance than that the larger refiners have decided to play the same game. The upshot, it is said in oil circles in Chicago, will probably be the shutting down of hundreds of wells where continued operation will mean large losses. Whether or not a rise in the price of crude oil will re-open the wells and restore the present condition of overproduction, the oil men are not prepared to predict.

Oklahoma Refiners Expanding Here

Two Oklahoma refiners have considerably increased their operations in the Chicago district during this year. Barnsdall Refineries, Inc., by purchasing the properties of Advance Oil Co. and Sparton Petroleum Co., has brought the number of its retail outlets in Chicago to 65. It has also increased the number of its stops in Milwaukee to about this number.

Phillips Petroleum Co. formally entered the Chicago district on December 3, 1930, and its growth here has been impressive. The Phillips company now has 246 retail outlets in the district, and three bulk plants to which it is making considerable additions.

Work is now underway to add to the gasoline storage capacity of the Phillips bulk plants. The bulk plant at 124th Street and Indiana Avenue will have an additional capacity of 48,000 gallons when the installation of six tanks is completed. Total capacity will be 120,000 gallons. The bulk plant at Archer and Western Avenues has a capacity of 240,000 gallons, which is being increased to 360,000 gallons. Ten 12,000-gallon tanks are being laid underground at this station. This is the only Phillips plant here where the tanks are underground. The excavation for the tanks covers about a square block.

At Central Park and Touhy Avenue, the Phillips company is installing three 27,000-gallon tanks which will bring the storage capacity of that bulk plant to 189,000 gallons. At the Archer and Western bulk plant station the Phillips company has leased the building formerly occupied by the United States Industrial Alcohol Co. plant. This building, which provides 10,000 square feet of space, was taken over by Phillips July 1, and plans are being considered for moving all of the company's local offices into this building. The cost of remodeling the structure, according to present plans, is $60,000. Cosden Oil Co. has recently moved its executive and sales offices from its Michigan Avenue address to its bulk plant at 2258 North Herndon Street.

Phillips Petroleum Co. last week opened up new jobbing territories for Phillips "66," in Michigan, Indiana and Ohio. Other companies are looking toward Michigan as an inviting field as it now appears that the freight rate outlook in that direction points to tempting concessions on petroleum products.

Great Lakes Pipe Line

Jobbers have shown considerable interest in the progress of work on the Great Lakes pipe line. Last week a group of jobbers visited the gasoline line terminal at Franklin Park, Chicago, which is nearing completion. One interesting phase of the pipe line, and one not readily explained, is the feeling that it has apparently imparted to many marketers that gasoline markets will be strongly affected by the pipe line when it begins to deliver gasoline. The fact that the member companies will continue to pay the regular freight charge of 2.38 cents a gallon on gasoline for transportation makes the diffidence of the jobbers inexplicable.

Natural Gasoline

Some natural gasoline has been moving in this territory although seasonal considerations are unfavorable to this material. Customers of trackage station operators, where motor fuel is sold at 9 cents including 3-cent tax, have discovered that a blend of natural gasoline and naphtha as prepared for cut price competition is worse than useless in the prevailing hot weather. In a much smaller degree the better grades of gasoline produced vapor lock during the recent record breaking temperatures. Losses due to the weather conditions were not borne by motorists alone. One refiner reported that claims filed in his offices for outage increased in number by several thousand per cent. On gasoline delivered in tank cars over long distances it was found that the endpoint of the gasoline rose from 417 degrees to 440 degrees. Natural gasoline prices were unchanged at: Grade A, 72-79.9, 375 endpoint and 90 per cent recovery, 2 cents; Grade AA, 80-87.9, 375 endpoint and 90 per cent recovery, 1¾ cents; Grade BB, 84-92, 375 endpoint and 85 per cent recovery, 1⅝ cents.

Kerosene

Kerosene continued exceedingly dull. Some material was moved at lower than the ruling prices as heavier distillate after the addition of a dash of gas oil. Water white, 41-43, was posted at 2 to 2⅛ cents, and 42-44, at 2⅛ cents to 2¼ cents. Prime white distillate sold at 1½ cents, while some excellent material with a yellow cast went for 1⅛ cents.

Gas Oil and Fuel Oil

Gas oils and fuel oils continued to suffer from decreased industrial and domestic demand and oversupply. Only one grade of fuel oil held in price. This was the 18-22 gravity material of low pourpoint, which has become scarce. Other material in this gravity dropped to 15½ cents a barrel. One cheering note in the fuel oil business last week was the announcement of President J. E. Gorman that the C.R.I.&P. locomotives are to be converted from coal burners to oil burners. This affects 231 locomotives and the conversion is expected to be completed within the next three months, possibly by the first of September.

More refiners are reported to be cracking their gas oils and fuel oils. In most cases these refiners have withdrawn from these markets. Others who do not have cracking facilities are filling up their storage. Prices at the close of last week had reached new lows. They were: 18-22 fuel oil, per barrel, 15½ cents to 20 cents for the 60 pourpoint material, and 20 cents to 25 cents for the zero material; 22-26 fuel oil, per barrel, 22½ cents to 25 cents for zero material; 28-30 fuel oil, per barrel, 35 cents to 37½ cents for zero material, and 32 cents for the 50 pourpoint; 32-36 gas oil, dark industrial, three-fourths cent to 1 cent for zero, and five-eighths cent for 35 pourpoint material; 32-36 gas oil, zero, seven-eighths to 1⅛ cents; 38-40 straw distillate, 1 cent to 1¼ cents.

Lubricating Oils

Although bright stocks and neutrals are moving in large volume to compounders in this territory, the prices have fallen steadily. These markets were very irregular and an unusually wide margin existed between the high and the low on prices. One refiner was moving the neutrals, 200, 240 and 300, at 10 cents, 11½ cents and 13 cents, respectively, and was asking 13 cents for his bright stocks. Elsewhere bright stocks of zero to 10 degrees, were 12 cents, with 11½ cents for the D color material, while 3 color, 200 S.A.E., material ranged from 7½ cents to 9 cents, in neutrals.

East Texans Upset Eastern Markets

Refiners in Atlantic Coastal Area Must Meet Aggressive Competition of Gasoline Made From Lowest Priced Crude

By A. E. Mockler

New York Bureau, The Oil and Gas Journal, Rooms 1919-21, No. 154 Nassau Street

NEW YORK, July 13.—East Coast refined products markets continue in unsettled position, with the undertone still definitely inclined to softness on major products. Price competition is still the dominant factor, with uncertainty regarding the East Texas situation continuing the principal obstacle to market recovery.

Gasoline gallonage has been steadily on the increase during recent weeks, and were it not for the liberal supplies of East Texas gasolines available, the East Coast market would be in strong statistical position, and strategically situated for the start of a steady upward movement in price. As it is, eastern refiners must continue to sit back and meet the competition afforded by gasoline refined from distressed crude, and hope for a change for the better.

Eastern refiners, in most instances, have succeeded in putting their houses in order, from the standpoint of working stocks, and have succeeded in writing down their inventories to a point where they are in satisfactory position from the standpoint of meeting competition. However satisfactory this meeting of competition may be in the retention of volume, is far from satisfying from the standpoint of earnings, and netbacks to the refineries leave little margin on the right side of the ledger at current price levels.

Refiners here hope that the crisis has been reached in the affairs of East Texas, and are hopeful that early action looking to a shutting off of the flow of distressed crude will be taken, which action is expected to react in constructive fashion upon the industry in general.

Refinery Gasoline

East Coast refiners continue to draw heavily against storage stocks of gasoline to take care of the steadily increasing consumption in this area, and the statistical position of the market, considering only East Texas holdings, is stronger. Stocks held by refiners in this territory declined 424,000 bbls. to a total of 7,134,000 bbls. during the week ended July 4.

Unfortunately, however, the eastern seaboard market is being "made" not by refiners operating in this territory, but by Gulf Coast and California shippers, and the result of the continued heavy movement of low-priced motor fuels from these areas is fully reflected in the gasoline price situation throughout local territory.

Posted prices for U. S. Motor gasoline range from 5½ to 6 cents per gallon on the part of major marketers here, with one seller, Richfield, quoting 6¼ cents for its product, all in tank car lots, f.o.b. refinery terminals. As has been the case for some months, however, posted prices have not governed the market by any means, and reports of spot transactions at 5¼ cents per gallon, and as low as 5 cents per gallon in some instances, are by no means infrequent.

Growing operations on the part of East Texas refiners have effectively upset the plans of East Coast interests for stabilization of their "home" gasoline markets during the summer months. East Coast sellers have opened up numerous outlets in Atlantic Seaboard territory, and shipments of gasoline refined from low-priced East Texas crude are steadily on the increase. With refiners in East Texas buying high-content crude oil at 10 cents per barrel, and possibly less, the advantages which they enjoy over refiners working on crude, the average price of which is considerably higher, are obvious. Independent marketers are handling the East Texas product in large quantities in this territory, and it now appears probable that the influence of gasoline from the Southwest will be sufficiently strong this season to strongly react against the possibility of substantially higher prices for motor fuel in this territory, and that this development, in turn, will retard the recovery of the industry as a whole in this field.

Tank Wagon Gasoline

Consumption of motor fuel throughout the East Coast territory is fully up to expectations for this season of the year, and demand is steadily widening. Oversupply of low-priced gasoline, however, is reacting against the possibility of profitable marketing operations by the great bulk of the industry here, and the situation, from an earnings standpoint, is still definitely unfavorable.

The continued drop in the wholesale market was reflected early in the past week by a cut of 1 cent per gallon announced by Standard Oil Co. of New Jersey, and effective at all points in its territory with the exception of Delaware. Other major marketers followed the reduction, which brought the general market more closely in line with price levels at which some of the price-cutting independents had been quoting.

Interest is now centering in the price situation in New York and New England territory, where growing price competition has created a situation which apparently can only be corrected by a general downward revision on the part of major marketers.

Independent brands of gasoline are becoming more prominent at retail filling stations, and local price competition has become so general that the price structure for virtually the entire territory shows a wide divergence. In the New York City area independent operators are offering gasoline at retail at 10 cents per gallon, plus tax, which means that motor fuel can now be bought under 8 gallons for $1, tax paid, the lowest general level reached in many years.

Thus far, the workings of the industry's revised code of ethics have not made themselves apparent in any improvement in the retail division of the industry, but trade leaders are working to make the code's provisions effective again, and are looking for tangible results in the near future.

Fuel Oil

Quiet trading prevails in the bunker oil market, with the posted price of 85 cents per barrel, bulk, at refinery terminals, generally adhered to in marine business. Volume of sales to shipping interests has shown a little falling off this month, and refiners are less optimistic regarding the outlook for the current quarter.

Competition for fuel oil business for shore plants continues rather keen, and the posted price of 85 cents per barrel has been shaded by a few cents in recent transactions. This shading has been necessitated largely by the competition of outside sellers, who have been in position to land an occasional cargo of distressed fuel oil from the Gulf or California at prices under the prevailing posted level here.

Eastern refiners are showing some apprehension over the long delay in bringing East Texas crude production into line, and the fear is expressed that dumping of fuel oil and other products from refiners operating on East Texas crude will exert a still further demoralizing influence on the general market here unless the conservation movement in East Texas shows early and substantial progress.

Diesel Oil

The recent cut to $1.55 per barrel at East Coast ports has failed to bring about any marked stimulation in consumption, but refiners believe that the cut, which brought the market to the lowest level in history, has been effective in staving off outside competition to an appreciable extent.

Recovery in the shipping business has apparently struck a snag, and contract withdrawals of Diesel oil by operators of passenger and cargo vessels has failed to reach the expected volume for this season of the year. Refiners are limiting their output of Diesel oil to current requirements, however, and the market position, from a statistical standpoint, is fairly stable in East Coast territory, despite continued unsettled conditions at other points.

Gas Oil

Seasonal quiet is reported in the gas oil market, with the posted quotation of 4 cents per gallon for 28 plus recycled oil being held to in most instances. Gas manufacturing companies in the East are drawing stocks of gas oil on contract in fair volume, although movement in some cases is below that of previous years.

Refiners are of the opinion that the gas oil market in Atlantic Seaboard territory is in line for radical readjustments in the near future. Natural gas as a direct competitor with the manufactured fuel is closer to an actuality now than ever before, and it is expected that within the next year the natural fuel will become an important factor in many sections of the territory where the manufactured product now holds sway. This development, together with the growing use of fuel oil in the manufacture of artificial gas, presages a substantial drop in the use of gas oil by the large utility companies.

Kerosene

Continued weakness is reported in the eastern kerosene market, and volume in the tank car market is below normal. The current market range is 4¾ to 5 cents per gallon for 41-43 water white in tank car lots, f.o.b. refinery terminals, although odd lots of spot kerosene could probably be picked up under the inside figure.

Tank wagon kerosene markets have not yet reflected the continued easing off in the position of the refinery market, although the posted price in retail markets is expected to reflect the next change in the official posted price basis in the East. Tank wagon volume has been rather sluggish during recent weeks, and it appears probable that the demand from the summer resort sections this season will be considerably under that of recent years.

Paraffin Wax

Volume of spot trading has fallen off considerably during the past week, and the market has likewise eased off. Spot 125-127 a.m.p. is quoted at 3 cents per pound, off an eighth, and 130-132 a.m.p. shows a similar decline at 3½ cents per pound, other grades remaining unchanged.

Domestic consumers have generally slackened off in their buying operations, and considerable business which came in during the latter part of June for July shipment has been held back, buyers advising sellers to withhold shipment until further notice.

Quite a buying spurt developed on export grades for shipment to Colombia recently, this being due to the desire on the part of buyers in that country to stock up prior to the imposition of a higher export duty, which is now in effect. Export demand in other directions, however, has been rather light.

Lub Oil

Cylinder oils appear to have firmed up somewhat at the refineries and this development has been accompanied by a stiffening tendency on the spot position. No price changes developed in the local market during the past week, and volume of business showed slight gains in some directions.

Consumption of automobile lub oils is picking up steadily, and distributors in most instances are carrying extremely light reserve stocks, necessitating frequent replacement buying in the spot market. This has had a tendency to quicken activity all along the line, and with the price basis somewhat steadier, traders are considerably encouraged over the outlook for the remainder of the summer season.

Industrial demand for red and pale oils has quieted further. Consumers in the textile industry are curtailing their purchases, due to the usual seasonal slackening in manufacturing operations, and this condition is paralleled in many other lines of industry. The outlook for fall business, however, is generally regarded in a favorable light.

Petroleum Exports

A substantial increase in export movement of refined petroleum products from the local port developed during the week ended July 4, with contract shipments believed to account for the bulk of the increased shipments.

The heaviest shipments of the week went out on the tanker Hanseat, which carried more than 1,500,000 gallons of lubricating oils to Dutch and German ports.

The following table shows principal exports of refined petroleum products from New York for the past three weeks (all figures in gallons unless otherwise noted):

	Week ended		
	July 4	June 27	June 20
Gasoline	110,000	110,000	25,000
Naphtha	225,000	.....	15,000
Kerosene	15,000	75,000	40,000
Fuel oil	225,000	48,000	160,000
Lubricating oil	3,620,000	1,120,000	1,340,000
Petroleum, ref.	2,150,000	1,325,000	1,745,000
	Pounds		
Petrolatum	.....	.....	.....
Paraffin wax	1,390,000	1,315,000	1,000,000
Refined	95,000	255,000	25,000
Scale	50,000	1,290,000	190,000
Lubricating grease	400,000	1,075,000	600,000

Reports of an impending advance in crude oil quotations in the Mid-Continent and elsewhere have stimulated buying interest in refined products among export operators to some extent, but buyers are inclined to discount the more bullish outlook until there is some definite evidence that the flood of crude from East Texas has been definitely stemmed. Foreign buyers are fully cognizant of the situation brought about by the overproduction of crude in East Texas, and are using the weak Gulf market created by this development as an argument for lower prices on refined products for shipment out of the East Coast area.

Exporters of cased gasoline and kerosene have revised their quotations in line with the lower bulk market prevailing at the Gulf, and are likewise being called upon to meet price competition on the cased products from the Soviet in foreign markets, notably in South America.

Export Market

The Gulf market quieted considerably during the week, following the marked activity of the preceding week, and no cargo fixtures were reported made. An inquiry was in the market for a mixed cargo of 3,000 tons of 64-66, 2,000 tons of Navy, 1,000 tons each of water white, prime white, fuel oil, and gas oil. The cargo is

destined for France, second half August, first half September loading, and at the time of writing had not been closed.

Buying interest was also lacking in Venezuelan and Mexican crudes, no cargo fixtures being reported.

No additional trading in East Texas crude for export developed during the period, and the market remained nominally held at 40 cents per barrel, f.o.b., Gulf ports.

French buyers who were in the market some weeks ago with inquiries for East Texas crude in considerable quantities for later delivery, have withdrawn pending further developments in the situation. With the posted price down to 10 cents per barrel, and spot business on distressed crude reported done under the 10-cent level, foreign buyers are naturally hesitant about closing contracts for deferred delivery at quotations substantially in excess of the spot market.

France, it is known, is counting on American crude in considerable quantities to supply her refineries until Iraqian production is made available, but with crude requirements not pressing until the refinery construction program in France is completed, these foreign buyers are in position to mark time pending further developments in the American market situation.

Imports

Imports of crude and refined petroleum at the principal United States ports for the week ended July 4 totaled 1,910,000 bbls., a daily average of 272,857 bbls., compared with 1,083,000 bbls., a daily average of 154,714 bbls. for the previous week and a daily average of 212,800 bbls. for the month of June. Details follow:

	Bbls. of 42 gals.
At Atlantic Coast ports—	
Baltimore	343,000
New York	902,000
Philadelphia	300,000
Others	208,000
Total	1,753,000
Daily average	250,429
At Gulf Coast ports—	
Galveston district	62,000
New Orleans and Baton Rouge	95,000
Total	157,000
Daily average	22,428
At Atlantic and Gulf Coast ports—	
Total	1,910,000
Daily average	272,857

Distribution of total imports is as follows:

Crude	1,058,000
Gasoline	473,000
Fuel oil	379,000

California Oil Receipts

Receipts of California crude and refined petroleum at the principal United States ports for the week ended July 4 totaled 348,000 bbls., an average of 49,714 bbls. daily, against 156,000 bbls., or 22,286 bbls. per day, in the previous week, and a daily average of 39,200 bbls. for the month of June. Details follow:

	Bbls. of 42 gals.
At Atlantic Coast ports—	
Baltimore	138,000
New York	210,000
Total	348,000
Daily average	49,714
At Gulf Coast ports—	
All ports	None
At Atlantic and Gulf Coast ports—	
Total	348,000
Daily average	49,714

Distribution of total California oil receipts follows:

Gasoline	301,000
Kerosene	47,000

Shipments of California refined products for Atlantic and Gulf Coast ports during the week (with ownership of tanker moving the oil where such owner is an oil company) were as follows:

For New York—95,100 bbls. of distillate on the Standard Arrow (Standard Oil Co. of New York); 72,800 bbls. of gasoline on the Texas (The Texas Company); 118,300 bbls. of gasoline on the Tide Water (Tide Water Associated Oil Co.); 90,000 bbls. of gasoline on the Livingston Roe (Standard Oil Co. of New York).

For Philadelphia—113,700 bbls. of gasoline on the Western Sun (Sun Oil Co.); 116,200 bbls. of gasoline on the Sun (Sun Oil Co.).

For Providence—73,000 bbls. of gasoline on the New York (The Texas Company).

For Baltimore or New York—145,400 bbls. of gasoline on the Australia.

Charter Market

Black Sea fixtures constituted most of the activity in the tanker charter market during the past week, little interest being shown in vessels to move crude or products transatlantic from the United States. The coastal and intercoastal markets were also stagnant.

Fixtures reported during the week were as follows:

Motorship Drafn (Norwegian), 10,500 tons, refined and/or spirits, Black Sea to United Kingdom/continent, 7/-, Ireland 6d extra.

Steamer British Star (British), 4,080 net, crude, two trips, Aruba to Teneriffe 6/6, July 25/August 5.

Motorship Lise (Norwegian), 3,961 net, clean, Black Sea to United Kingdom/continent, 11/-, July/August.

Motorship Zoroaster (Swedish), 1,830 net, lubricating, Black Sea to United Kingdom/continent, 11/-, July/August.

Motorship Deodata (Norwegian), 2,241 net, lubricating, Black Sea to French Atlantic, 9/6, July.

CENTRAL WEST FIELDS

(Continued from Page 54)

of Bowling Green that they will co-operate with producers and royalty owners of crude oil property in every way possible for the construction of an oil refinery in Bowling. It is thought that a refinery in Bowling Green to care for production in Warren, Allen and Simpson Counties is the oil solution in the Bowling Green Field.

Completions

Completions are few in any area of the Kentucky fields. The best of the late completions was a 300-bbl. shallow oil well by Jess Watts and others, the Tom Caudill No. 3 well in the Legrande Field of Hart County.

S. S. Silverthorn's test on the William Bumgardner farm, near Horse Cave in Hart County, was reported a dry hole.

K. M. Dole and others are said to have a light gas well on the Reidman farm in McCracken County.

OKLAHOMA FIELDS

(Continued from Page 39)

SW, Section 8-9-6, swabbed 495 bbls. from Wilcox sand 4,227-45 feet. No. 2 Hassman, SW cor. SE NE, Section 3-8-5, has been completed for 930 bbls. in Hunton lime and Wilcox sand 4,180-4,201 feet.

Haskell County

Sooner Oil & Gas Co.'s No. 1 Perral, C NE SE, Section 9-7-20, is drilling at 200 feet. W. L. Bowers Oil & Gas Co.'s No. 1 Kinta Townsite, Block 1, SE cor. SW SW, Section 31-8-20, has been completed for 1,250,000 feet of gas in sand 710-62 feet.

Muskogee County

P. Boyle and others moved a machine in for No. 2 C. Barnett, SW cor. NE SW, Section 35-16-15. H. L. Jolly's No. 2 Spaulding, SE cor. NE, Section 8-15-18, made 7,194,000 feet of gas in sand 1,585-90 feet.

Pittsburg County

Utilities Production Co.'s No. 4 Carney, SW cor. NW SW, Section 9-7-18, has been completed for 13,500,000 feet of gas in sand 1,771-2,073 feet.

Wagoner County

F. L. Beam and others' No. 2 Davis, NW cor. NE SW, Section 22-17-16, has been abandoned at 1,008 feet. C. D. Bradley's No. 2 J. Jacobs, NE cor. SE NW, Section 7-15-17, made 3,500,000 feet of gas from sand 1,014-28 feet.

EAST TEXAS CHAPTER PRODUCTION DIVISION

DALLAS, Tex., July 13.—The southwestern district of the American Petroleum Institute, division of production, will organize a new chapter for the East Texas oil fields at a meeting called for 2 p.m. July 15, at the Chamber of Commerce Building, Longview, Tex. The call is issued by Blaine Johnston, chairman of the organization committee, who will be assisted in this work by E. Stanley Durward, chairman of the southwestern district, W. H. Meier, and John Ritter.

The purpose of this A.P.I. chapter is to provide a forum for the discussion and exchange of information on problems relating to drilling, production and pipe line transportation of crude oil. It will provide a common meeting place for everyone in the oil business in the East Texas area to get together and discuss their mutual problems.

A group of officers consisting of chairman, vice chairman and secretary-treasurer will be elected and a membership fee of $1 per year charged. Anyone engaged in the oil business is eligible and welcome to join.

For the opening program several short talks will be given dealing with topics of local interest and fire and accident prevention will be given particular attention.

The following program has been arranged for this meeting:

Presiding—Blaine B. Johnston (Simms Oil Co.), vice chairman for East Texas-Southwestern District, American Petroleum Institute division of Production.

Introductory remarks by Robert R. Penn, vice president, American Petroleum Institute, and chairman of the Division of Production.

A.P.I. District and Chapter Activities by E. Stanley Durward, chairman, Southwestern District, American Petroleum Institute Division of Production, and W. H. Meier, vice chairman, Central Committee on District Activities, in charge of chapters.

"Harmonizing Conservation Activities" by Capt. J. F. Lucey, Dallas, Tex.

"The Relation of East Texas Geology to Planned Well Spacing" by R. B. Whitehead, chief geologist, Atlantic Oil Producing Co., Dallas, Tex.

"Fire and Accident Prevention in East Texas" by H. N. Blakeslee, safety engineer, American Petroleum Institute, Dallas, Tex.

Election of chapter officers—(a) Report of nominating committee; (b) Discussion of plans for future meetings.

QUITE DIFFERENT FROM MODERN PLANTS

—(C) P. and A. Photos.

Benzine and gasoline are no modern invention. These are the medieval refineries of the Arabs.

FRANKS AND WHITE LEASE TIDAL SHOP

H. H. Franks and Carl White, Jr., have recently leased the machine shops of the Tidal Oil Co. in Tulsa for the purpose of manufacturing the R. F. Winch and other specialties and doing a general oil field equipment repair business.

Mr. Franks was superintendent of this plant for the past 12 years and supervised all building operations and installation of machine tools. He is thoroughly familiar with all types of oil field equipment and its functions and is the designer of the new type all steel rig front mounted as to permit of its installation at the well without concrete foundations.

This front consists of jack posts, samson post, steel walking beams, pitman, adjustable engine foundation, rig irons and steel foundations carrying all parts, which is so designed that the outfit can be skidded without being dismantled. The samson post is adjustable permitting of exact alignment of the walking beam between the hole and crank.

Carl White, Jr., is a graduate of Sheffield Scientific School, Yale University, 1916, and has devoted his time since to design and sales promotion work for oil field equipment companies. For 10 years he was with Lucey Manufacturing Co. and during part of that time was in Mexico, South America and Russian oil fields. He spent some time in London, England, as representative for the Lucey Manufacturing Co.

Mr. White has specialized in the design of oil field equipment and is largely responsible for the development of the R. F. winch now meeting with favorable reception by the field men in many areas in the Mid-Continent fields. This winch is driven by a power take off from the automobile engine and can be mounted upon any size or make of truck.

Another feature of this winch is the new type twin disc type friction clutch used to transmit power from shaft to drum. This clutch is giving good results in actual field operation in Oklahoma and arrangements are being made to establish sales representation in East Texas and other active fields.

The combination of a good oil field machinery mechanic and designing engineer backed by a thoroughly equipped machine, blacksmith, boiler and welding shop will place at the disposal of the oil companies and manufacturers a service in building and repairing machinery and assembling equipment sent out knocked down for use in the oil fields long needed. The shops are located on a Frisco Railroad switch and paved highway and easily accessible to the entire Mid-Continent oil field area.

DR. ACHESON ONCE A GAUGER

Dr. Edward G. Acheson, one of America's foremost scientists whose discoveries of carborundum, oildag and artificial graphite have revolutionized history and science died in New York on July 6 at the age of 76 years. In 1877, at the age of 22 years, he went to the Bradford oil field in Pennsylvania and became a tank gauger and while so employed worked out a system of computing tank measurements.

EAST CENTRAL TEXAS WILDCATS

(Continued from Page 30)

ELLIS COUNTY

E. M. Roger's No. 1 John Lee Winn, 1,650 ft. from E and 510 ft. from S of Orland ..... Shut down 1,360 ft.; drill stem in hole.

FRANKLIN COUNTY

George L. Pace and L. B. Pruitt's No. 1 C. E. Cowan, 150 ft. out of NE cor. of 92-ac. tract and survey, Lipscomb Sur. ..... Drlg. 3,526 ft.

FREESTONE COUNTY

Raley and Clark's No. 1 McLancaster (Pampier), 150 ft. from E of W line and center of N and S line, B. Avant Sur. ..... Moving in rig.

E. L. Smith's No. 1 Emily Jackson, center of N 150 acres of 300-ac. Emily Jackson tract ..... Drlg. 3,221 ft.

GREGG COUNTY

Abernathy et al's No. 1 L. A. Rodden, 680 ft. from N and 320 ft. from E lines of Martha Dillard Sur... Derrick.

O. O. Alford et al's No. 1 L. M. Colburn, 208 ft. from N and 392 ft. from E of 39.7-ac. tract, Henry Hobson Sur. ..... Drlg. 2,720 ft.

Arkansas Fuel Oil Co.'s No. 1 J. H. and Jim Whitaker, 330 ft. from S and W lines of 106-ac. tract in C. H. Alexander Sur. ..... Top sand 3,513 ft.; top Pecan Gap 2,435 ft.; base 2,895 ft.; top Austin chalk 3,480 ft.

Atlantic Prod. Co.'s No. 1 J. J. Fuller, 394 ft. from E and 343 ft. from S of 50-ac. tract and lease, Mowery Irwin Sur. ..... Derrick.

Armstrong and Pitts' No. 1 Walker, 940 ft. from N and 1,970 ft. from E of survey, Martha Dillard Sur. ..... Derrick.

P. P. Ash et al's No. 1 A. H. Tubbs, 1,550 ft. from S and 4,120 ft. from E of survey, Dolores Sanches Sur. ..... Derrick.

Badgett and Ward's No. 1 Sample, 655 ft. S and 185 ft. W of SW cor. of A. Z. Jeffery 29.5 acres, W. P. Chisum Sur. ..... Drlg. 1,500 ft.

Becker et al's No. 1 J. C. Barrett, 330 ft. from S and W lines of N 100 acres of 320-ac. tract in G. W. Hooper Sur. ..... Shut down 2,500 ft.

Barnsdall Oil Co.'s No. 1 Ladd Smith, 300 ft. from N and 150 ft. from W line of survey, J. S. Carrithers Sur. ..... Location.

Barnsdall Oil Co.'s No. 1 G. E. Adams, 1,150 ft. from S and 3,720 ft. from W of G. W. Hooper Sur. ..... Derrick.

Bob et al's No. 1 T. L. Broy, 290 ft. from E and 1,640 ft. from S of H. A. Hoidt Sur. ..... Location.

Byrd-Frost, Inc.'s No. 1 J. R. Watson, center of 5-ac. lease, 1,500 ft. from E and 2,250 ft. from S lines of survey, J. S. Carrithers Sur. ..... Top Austin chalk 3,542 ft.; set 6⅝-in. csg.; T. D. 3,550 ft.

M. T. Beeler's No. 1 Finley and Thomas, 150 ft. from N and 150 ft. from W of 10-ac. lease, C. H. Alexander Sur. ..... Building derrick.

Branson et al's No. 1 J. J. Fuller, 1,050 ft. from N and 170 ft. from W of survey, M. Alexander Sur. ... Derrick.

Bell & Graddy's No. 1 M. George (or Daniels), 225 ft. S and 650 ft. W of 26-ac. tract, Mary Van Winkle Sur. ..... On fire; T. D. 3,580 ft.

B. L. Brooklin's No. 1 J. M. Tuttle, 150 ft. from N and 205 ft. from E of 12½-ac. lease, William H. Castleberry Sur. ..... Shut down 2,800 ft.

Callahan et al's No. 2 Mollie Fenn, 450 ft. from S and 150 ft. from W lines of 44-ac. tract in D. Ferguson Sur. ..... Derrick.

Columbia Oil & Gas Co.'s No. 1-A Harley, 650 ft. E and 300 ft. S of SE cor. of Laura Walker 45-ac. tract, William Robinson Sur. ..... Moving in rig.

Continental Oil Co.'s No. 1 J. J. Fiewellen, 359 ft. from N and 949 ft. from E of 200-ac. lease, Marshall Mann Sur. ..... Location.

Davis and Russell's No. 1 M. E. Anderson, 150 ft. from E and 75 ft. from S of 3-ac. lease in Kilgore Townsite, Mary Van Winkle Sur. ..... Shut down 3,558 ft.

Charles Davidson et al's No. 1 Paul Jones, 7,000 ft. from most southerly N line and 3,600 ft. from W, W. P. Chisum Sur. ..... Shut down 3,666 ft.

Duffey-Davis and McGrede's No. 1, 1,310 ft. from N and 3,160 ft. from E of survey, Martha Dillard Sur. ..... Rig up.

Eastland Oil & Gas Co.'s No. 1 B. B. Sparks, 150 ft. from N and 150 ft. from W of E 50 acres of 100-ac. tract, Harvey R. Kirk Sur. ..... Drlg. 610 ft.

Empire Gas & Fuel Oil Co.'s No. 1 Mrs. L. J. Rogers, 330 ft. from N and E lines of 66.5-ac. tract in George A. Thomason Sur. ..... Rig up.

Dr. J. C. Falvey et al's No. 1 fee, 150 ft. from S and 150 ft. from W of 58-ac. tract, Marshall Mann Sur. ..... Skid rig.

Greer's No. 1 L. M. Colburn, 150 ft. from E and 150 ft. from S of 45-ac. lease, 5,700 ft. from E and 850 ft. from N of survey, Henry Hathaway Sur. ..... Rig up.

Gulf Production Co.'s No. 1 Willie Holt, 150 ft. from N and 1,700 ft. from E lines of John Blair Sur. .... Drlg. 2,501 ft.

Harper Petroleum Corp.'s No. 1 Woodley Jones, 2,000 ft. from N line and 3,900 ft. from E line of William H. Castleberry Sur. ..... Derrick.

Galves Petroleum Corp.'s No. 1 M. T. Cole, 1,000 ft. E and 2,100 ft. N of NE cor. of Samuel Brooks Sur. in the J. M. Meador Sur. ..... Building derrick.

Gulf Production Co.'s No. 1 T. C. Reeves et al, 175 ft. from S and 525 ft. from W lines of lease in G. F. Penn Sur. ..... Set 163 ft. of 10-in. csg.

Howard and Russell's No. 1 Stone, 150 ft. from N and 150 ft. from E of 100-ac. tract, Bailey Anderson Sur. ..... Derrick.

Humble Oil Refining Co.'s No. 1 W. W. Holland, 150 ft. from E and 336 ft. from S lines of 246-ac. tract in M. Mosley Sur. ..... Drlg. 2,740 ft.; top Pecan Gap 2,446 ft.

Humble Oil & Refining Co.'s No. 1 H. M. Lawrence, 540 ft. from N and 219 ft. from W of 100-ac. tract, David Ferguson Sur. ..... Moving in material.

Humphrey et al's No. 1 A. Spear, 150 ft. from N and W lines of Spear tract, Mary Van Winkle Sur. ..... Drlg. 3,576 ft.

K. B. Oil Co.'s No. 1 Dickson, 150 ft. from S and 150 ft. from W of 5-ac. lease, Mary Van Winkle Sur. ..... Rig up.

Kiltner and Easterling's No. 1 Missie Young, 230 ft. S and 250 ft. E of SW cor. of the H. Edwards Sur. in the C. Rhodes Sur. ..... Location.

W. R. Jones et al's No. 1 Dovie C. Satterwhite, 200 ft. from S. and 180 ft. from W. of 12½-ac. tract, Mowry Irwin Sur. ..... Base Pecan Gap 3,006 ft.; top Austin chalk 3,646 ft.; base 3,680 ft.; top sand 3,685 ft.; T. D. 3,707 ft.

Kimsey-Trimble's No. 1 Griffith Davis, 922 ft. E of N line of Griffith Davis 119.5-ac. tract from NW cor. of same and 145 ft. S at right angles, W. P. Chisum Sur. ..... Drlg. 3,500 ft.

Charles Love et al's No. 1 J. B. Doby, 150 ft. from E and 150 ft. from S of S 6 acres of W 42 acres of 170-ac. tract, W. H. Castleberry Sur. ..... Derrick.

Lion Oil & Refining Co.'s No. 1 C. D. Evans, 264 ft. from N and 264 ft. from S, 350 ft. from W of 16-ac. lease, Pleasant McAnally Sur. ..... Set 6⅝-in. csg. 3,500 ft.

J. K. Livingston Oil Co.'s No. 1 D. C. Johnson, 200 ft. from N and 150 ft. from E of survey, Martha Dillard Sur. ..... Top Pecan Gap 2,480 ft.; shut down 2,810 ft.

Magnolia Petroleum Co.'s No. 1 L. A. Griffin, 5,225 ft. from W and 4,550 ft. from N of survey, Mary Van Winkle Sur. ..... Location.

Mid-Kansas Oil & Gas Co.'s No. 1 James Moore et al, 150 ft. from S and E lines of most southerly SE cor. of 90-ac. lease in J. Mosley Sur. ..... Drlg. 1,600 ft.

George L. Pace et al's No. 1 W. D. Anderson, 150 ft. from N and 150 ft. from W of 13¾-ac. tract, G. W. Hooper Sur. ..... Top sand 3,597 ft.; T. D. 3,612 ft.

Pelican Natural Gas Co.'s No. 1 A. Spear and R. H. Laird, 1,650 ft. from N and 147 ft. from E lines of A. Norris Sur. ..... Drlg. 2,803 ft.; top Pecan Gap 2,548 ft.

Prince and Prince's No. 1 J. Worr, 630 ft. from W of NW cor. of George Hampton Sur., Haden Edwards Sur. ..... Derrick.

Ross et al's No. 1, located on Findley & Thomas 50-ac. tract, 150 ft. from S line of 6.66-ac. lease, C. H. Alexander Sur. ..... Derrick.

C. Rosenfield et al's No. 1 J. A. Knowles, 700 ft. from E. 1,250 ft. from N. William Lyles Sur. ..... Shut down 3,550 ft.

Scheig et al's No. 1 Rube Smith, 1,100 ft. N and 300 ft. from W of tract and survey, Slaughter Sur. ... Derrick.

Selby Oil & Gas Co.'s No. 1 M. T. Cole, 150 ft. from N and 300 ft. from E lines of lease in J. M. Meador Sur. ..... Drlg. 1,750 ft.

Sneed and Worley's No. 1 Lillie Willis, 300 ft. from E and 400 ft. from S of 13.57-ac. tract, G. W. Hooper Sur. ..... Base Pecan Gap 2,920 ft.; top Austin 3,575 ft.; base 3,620 ft.; set csg.

Sinclair Oil & Gas Co.'s No. 1 M. T. Cole, 2,640 ft. from N and 2,742.2 ft. from W line of survey, Samuel Brooks Sur. ..... Cleaned out and on open gauge; T. D. 3,681 ft.

Sun Oil Co.'s No. 1 J. W. Akin, 330 ft. from N and W lines of 25.68-ac. tract in George A. Thomason Sur. ..... Set 10-in. csg. at 253 ft.

Sun Oil Co.'s No. 1 J. T. Loden, 150 ft. from S and 160 f from W of 100-ac. tract, Dolores Sanches Sur. ..... Top sand 3,654-60 ft.

Sun Oil Co.'s No. 1 Pentecost, 150 ft. from S and 150 ft. from W of lease, Mary Scott Sur. ..... Coring 3,624 ft.; top sand 3,600 ft.

Superior Oil Co.'s No. 1 L. C. Ingram, 200 ft. from E and 167 ft. from S of 160-ac. tract in W. E. Postelle Sur. ..... Drlg. 3,486 ft.

L. C. Thorpe's No. 1 J. A. Butts, 4,850 ft. S of N and 5,300 ft. E of W line of survey, Mary Van Winkle Sur. ..... Set 100 ft. of 12½-inch csg.

Tidal Oil Co.'s No. 1 Lake Divernia Fish and Game Club, 300 ft. from N and 550 ft. from W lines of tract in William G. Painter Sur. ..... Rig up.

Vacuum Oil Co.'s No. 1 R. S. White, 200 ft. from S and W lines of 82-ac. tract in D. Moore Sur. ..... Top sand 3,497 ft.; preparing to run pipe.

Valentine Oil Co.'s No. 1 Goyne-Hughey, 6,100 ft. from S and 6,800 ft. from W of survey, Mary Van Winkle Sur. ..... Derrick.

H. M. Wages et al's No. 1 Finley and Thomas, 165 ft. from E and 150 ft. from S of 10-ac. lease, Charles H. Alexander Sur. ..... Shut down 3,200 ft.

Woodley Petroleum Co.'s No. 1 Dyers, 200 ft. from S and 200 ft. from W of 640-ac. lease, H. Hathaway Sur. ..... Rig up.

Ziegler Oil Co.'s No. 1 L. D. Campbell, 540 ft. from N and 219 ft. from E of 72½-ac. tract, David Ferguson Sur. ..... Derrick.

HENDERSON COUNTY

Westside Investment Co.'s No. 1 Thornhill, 450 varas from W and 400 varas from N line of survey, James Spivey heirs Sur. ..... Shut down 4,850 ft.

HOPKINS COUNTY

Thelma Wells' No. 1 Taylor, 220 ft. from N and W lines of 80-ac. tract in the John Polk Sur. ..... Derrick.

HOUSTON COUNTY

N. E. Irish's No. 1 Mrs. Byrdie Watters, 2,300 ft. W and 300 ft. S from the NE cor. of I. J. Ellis Sur. ... Rig up.

Ramsland and Ramsland's No. 1 Pennington, 750 varas W of E line and 500 varas from S line of survey on 186-ac. tract, Ramond LaGarza Sur. ..... Shut down 85 ft.

Phillips and Phillips' No. 1 Kennedy Bros., 485 varas out of SW cor. of 100-ac. tract, Jose M. Procella Sur. ..... Derrick.

LAMAR COUNTY

Indian States Oil Co.'s No. 1 W. T. Watson in Ignalius Aud Sur. ..... Location.

Puritan's No. 1 George Parr, 2,000 ft. from W of Frisco Railway and 1,000 ft. from E line of R. Russell Sur. ..... Ready to spud.

LEON COUNTY

Cooper et al's No. 1 Lynch, 4,000 ft. from the W line and 250 ft. N from the S lines of Thomas H. Gardner Sur., and in 200-ac. tract ... . Rig up.

LIMESTONE COUNTY

George McCamey's No. 1 B. K. Arnett, center of Blk. 13 in Casson Townsite ..... Shut down 1,720 ft.

MORRIS COUNTY

Dumas et al's No. 1 Tom Ball, 1,046 ft. from E and 248 ft. from S of 71-ac. tract, A. S. Young heirs Sur. ..... Derrick.

Harry Elliott et al's No. 1 Clayton B. Brown, 722 ft. from N and 278 ft. E of NE cor., J. S. Slaughter Sur. in the George Gyer Sur. ..... Shut down 3,892 ft.

Shelby Oil Co.'s No. 1 Clayton Brown, located in Willis Coffey Sur. ..... Coring 3,364 ft.

NACOGDOCHES COUNTY

Benedum & Trees' No. 1 Conkwright, 150 ft. from N in center of E and W lines of A. H. Conkwright 100-ac. tract, J. A. Cherino Sur. ..... Drlg. 5,213 ft.

Bunte et al's No. 1 A. F. Boatman, 330 ft. from S and 150 ft. from W of 67-ac. tract, William A. Moore Sur. ..... Shut down 1,605 ft.

Burke et al's No. 1 F. R. Patterson, 6,515 varas from W and 315 varas from W line of Patterson 70-ac. tract, Joseph Las Santos Chay Sur. ..... Shut down 4,270 ft.

Churchill-Armstrong's No. 1 Max W. Hart, 2,640 ft. from N line and 2,640 ft. from S of N line of survey, George Pollett Sur. ..... Derrick.

Foreman and Weller's No. 1 Norris, 60 ft. NW of E line and 420 ft. S of road, in 73.5-ac. tract, Hosseas Y. Barbo Sur. ..... Shut down.

Foreman et al's No. 1 Robert Mattaner, NW cor. of 520-ac. tract, J. A. Cherino grant ..... Rig up.

Harwell and Scott's No. 1 R. I. Driver, 1,500 ft. from SE cor. of P. B. Ballard 135-ac. tract, 15 miles SE of Nacogdoches in Patricia De Torres Sur. ..... Shut down 2,260 ft.

Joiner and Henson's No. 1 Andy Legg, 330 ft. from N and 330 ft. from W of tract, John Durst Sur. ..... Shut down 3,125 ft.

Morgan Oil Corp.'s No. 1 R. E. Burt, center of J. L. Reed 20-ac. tract, Jose Luy De La Bega Sur. ..... Shut down 4,012 ft.

Naco Oil Co.'s No. 1 J. C. Orton, 1,000 ft. NE of highway and E of town and E of creek in Nacogdoches Townsite, A. Riola Sur. ..... Location.

MARSHALL

Solves a Big Problem FOR OIL MEN Now in East Texas

MARSHALL answers the perplexing question that faces every oil man in the East Texas field—"Where in East Texas can my family and I live safely, healthfully and normally?" Marshall is close enough to the field to be convenient for you .... far enough away from the oil fields to escape unpleasant oil-boom conditions. Bring your family to Marshall.

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Pure artesian water supply ... adequate modern sewerage system ... no swampy land ... no malarial mosquitoes ... rigid milk and food inspection ... strict traffic control ... two modern hospitals.

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A clean, peaceful city ... no boom-town conditions ... churches of every creed ... friendly people. A normal, happy home for yourself and your family.

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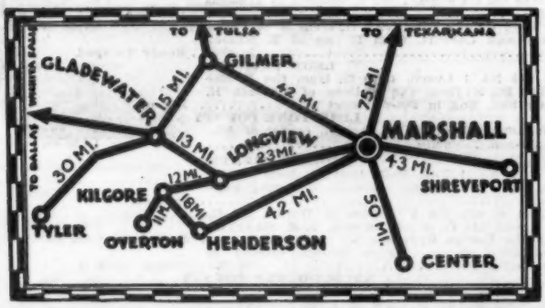
A city of the Old South, almost a hundred years old—but with every modern city convenience. Modern stores and theaters. Safe banks. Splendid school system. Paved streets.

NORMAL LIVING COSTS

No oil-town prices in Marshall. Rents and living expenses are normal. Plenty of apartments, houses and rooms.

AT THE FRONT DOOR OF THE OIL FIELDS

Marshall is just ½ to 1½ hours' drive to every part of the East Texas oil fields and the Northern Louisiana fields. Good roads, bus, train and plane lines.



This map shows how conveniently Marshall is located with respect to the East Texas and Louisiana fields.

Write to or call at the Chamber of Commerce, Marshall, Texas, for special booklet and other information.

Marshall

A Normal, Healthful Home for Oil Men and their Families

M. A. Vaughn's No. 1 Dixon Greer, in the M. G. Herrera Sur. ..... Derrick.
Paul Vitek et al's No. 1 Hayter estate, 1,000 ft. E of Laco Creek and 300 ft. S of Nacogdoches and Jacksonville Highway De Las Santos-Coy Sur. ..... Shut down 3,000 ft.
W. W. Wheeler's No. 1 I. D. Parmley, about 155 varas N of S line and about center of E line of survey, John Kirby Sur. ..... Shut down 3,780 ft.
Sequia's No. 1 Vanover, 6,073 ft. from N and 6,636 ft. from E of Alford Oliver Sur., E. Boyd E 100-ac. tract ..... Digging pit.
Big Indian Oil Co.'s No. 1 J. N. Stewart, center of 79-ac. tract in the Jose Ignacio Ybarba Sur. ..... Location.
L. E. Trout and Dison's No. 1 E. A. Blount, 150 ft. out of NW cor. of survey and tract, E. D. Williams Sur. ..... Derrick.

RAINS COUNTY

Berry and Hale's No. 1 Ownsby, 150 ft. N and 1,100 ft. from E of most easterly SE cor. of survey, Alexander Sur. ..... Shut down 2,096 ft.

RED RIVER COUNTY

Royle and Jondreau's No. 1 V. S. Griffin, 700 ft. from N line and 650 ft. E of W line of survey, J. C. Brown Sur. ..... Derrick.
Dropuleman and Bundy's No. 1 J. W. Cunningham, 250 ft. from the S and 1,044 ft. from the E lines of B. M. Ballard Sur. ..... Rig up.
Harris & Joiner's No. 1 E. Howison, 225 ft. S. 185 ft. W of 79-ac. tract, William Humphreys Sur. ..... Shut down.
Pearsons et al's No. 1 J. R. Dellahunty, 500 ft. from N of Isaac Moore Sur. and 200 ft. E of E line of Robert Glass Sur. ..... Putting up new rig.

RUSK COUNTY—MISCELLANEOUS

Everett Drilling Co.'s No. 1 J. E. Ross, 100 ft. W of NE cor. of J. E. Ross 69-ac. tract, 11 miles E of Henderson in Jeremiah Leath Sur. ..... Drlg. 460 ft.
Humble Oil & Refining Co.'s No. 1-B Haywood White, 990 ft. from N and 262 ft. from W lines of 134-ac. tract in J. M. Scott Sur. ..... Derrick.
Devonian's No. 1 Mrs. Janie Alford, 150 ft. from N and W lines of E 40-ac. Alford tract in Henry B. Dance Sur. ..... Location.

KILGORE AREA—RUSK COUNTY

Crider and Manley's No. 1 R. A. Metley, 600 ft. from S and 1,150 ft. from W of J. T. McDaniels Sur. .... Derrick.
Doctor Thompson's No. 1, 150 ft. from N and 230 ft. from W of lease and survey, Mary Cogswell Sur. ..... Top sand 3,608 ft.; T. D. 3,625 ft.
Gulf Production Co.'s No. 1 M. R. Terrell, 330 ft. S and W of NE cor. Loc. 3 or 2,300 ft. from W and 1,550 ft. from S lines of E. G. Sevier Sur. ..... Drlg. 2,766 ft.; top Pecan Gap 2,593 ft.
Harry Elliott's No. 1 Carroll, 175 ft. from N and 200 ft. from E of 7-ac. tract, W. R. Cook Sur. ..... Location.
Humble Oil & Refining Co.'s No. 1 J. R. Box, 330 ft. from S and W lines of 125-ac. tract in T. J. Martin Sur. ..... Base Pecan Gap 3,163 ft.; top Austin chalk 3,622 ft.; sand 3,750-95 ft.
Humble Oil & Refining Co.'s No. 1 R. E. Holt, 330 ft. from N and E lines of 91.4-ac. tract in the J. M. Barton Sur. ..... Rig up and shut down.
Lyle and Orr's No. 1 Powers, 2,200 ft. from N and 360 ft. from E of survey, J. Womack Sur. ..... Rig up.
Moser's No. 1 Buntyn, 554 ft. from N and 325 ft. from E of survey, the most northeasterly cor. of survey, J. C. Snow Sur. ..... Spudded; shut down.
Navarro Oil Co.'s No. 1 Hindman, 350 ft. from S and 330 ft. from W of 11-ac. lease, W. W. Simms Sur. ..... Drlg. 3,565 ft.
J. J. O'Hearn's No. 1 Mary Moore McMillian, 2,110 ft. from N and 600 ft. from W of survey, T. J. Martin Sur. ..... Preparing to test.
Humble Oil & Refining Co.'s No. 1 W. P. Key, 330 ft. from N and 330 ft. from E of 42.28-ac. tract and survey, S. W. Field Sur. ..... Location.
Humble Oil & Refining Co.'s No. 1 S. G. Bagwell, 330 ft. from E and 330 ft. from S of 38-ac. tract, John Womack Sur. ..... Location.
Pelton Petroleum Co.'s No. 1 C. O. Christian, 775 ft. N and 500 ft. W of NW cor. of Meredith McCabe Sur. in the J. S. Whiteman Sur. ..... Derrick.
Mrs. Joyce Richardson, 150 ft. from N and 150 ft. from W of 10-ac. tract, Robert W. Smith Sur. ..... Derrick.
Shell Petroleum Corp.'s No. 1 W. P. Moore, 1,075 ft. from N and 308 ft. from E lines of H. Wiggins Sur., Abstract 875 ..... Drlg. 2,862 ft.
Southern Crude Oil Pur. Co.'s No. 1 Rena Christian, 330 ft. from E and 150 ft. from S of lease, W. R. Cooke Sur. ..... Rigging up.
State Production Co.'s No. 1 Gipson, 630 ft. from N and 175 ft. from E lines of tract in T. Lloyd Sur. .... Derrick.
Stephens and Turner's No. 1 Doctor Prickett, 150 ft. out of NE cor. tract in T. J. Roberts Sur. ..... Drlg. 3,460 ft.
Stanolind Oil & Gas Co.'s No. 1 Beal, 300 ft. from the S and W lines of the lease, W. P. Chisum Sur. ..... Fishing 3,663 ft.

JOINER POOL—RUSK COUNTY

T. C. Adams' No. 1 J. E. Arnold, 150 ft. from S and W lines of 26-ac. tract in M. J. Prue Sur. ..... Drlg. 2,958 ft.; top Pecan Gap 2,675 ft.
Armstrong and Pitt's No. 1 Cooper, 2,150 ft. from W and 166 ft. from N of survey ..... Drlg. plug.
Armstrong's No. 1 Alford, 151 ft. from S and 1,050 ft. from W of survey, T. J. Moore Sur. ..... Derrick.
Bellinger's No. 1 F. C. Warren, 400 ft. from S of most northerly S line and 900 ft. from E of most easterly E line of survey, W. G. Tuttle Sur. ..... Top Pecan Gap 2,760 ft.; base 3,200 ft.; shut down 3,540 ft.
Bullock's No. 1 Alford, 1,200 ft. from S and 150 ft. from W of survey, T. J. Moore Sur. ..... Derrick.
Campbell Oil Co.'s No. 1 Compton, 600 ft. from N and W line and Simon Del Rio Sur., 1½ miles NW of Minden ..... Derrick.
Cap Rock Oil Co.'s No. 1 Burton, 1,100 ft. E of W line and 520 ft. S of N line in SE cor. of 62½-ac. tract, Juan Jose Yarbo Sur. ..... Rig up.
Champline and Bass' No. 1 R. G. Mason, 3,900 ft. from E and 5,600 ft. from S of survey, J. B. De Cadena Sur. ..... Sand 3,648-50 ft.; coring 3,665 ft.
Dunnigan and Holt's No. 1 Canaler, 150 ft. N and W of SW cor. Gabe McIlroy 16.3-ac. tract in F. Cordova Sur. ..... Derrick.
Elzy and Tautenham's No. 1 Deason, 1,200 ft. from W and 3,700 ft. from S of survey, Juan Ximenes Sur. .. Shut down 2,310 ft.
Elzy Drlg. Co.'s No. 1 Frederick, 150 ft. from S and 603 ft. from W of Frederick 90-ac. tract, Juan Ximenes Sur. ..... Derrick.
Gulf Production Co.'s No. 1 W. L. Murphy, 150 ft. from N and W lines of 79-ac. tract in F. Cordova Sur. ..... Drlg. 3,627 ft.; top Pecan Gap 3,317 ft.; base 3,160 ft.; top Austin 3,606 ft.
Humble Oil & Refining Co.'s No. 1 Odell Blackwell, 332 ft. from N and 330 ft. from E lines of 72.5-ac. tract in the F. Cordova Sur. ..... Drlg. 2,629 ft.
Humble Oil & Refining Co.'s No. 1 J. E. Glover, 330 ft. N and 330 ft. from the NW cor. of the J. R. Lindsey 45-ac. tract in the Anna Melton Sur. ..... Drlg. 2,979 ft.

Humble Oil & Refining Co.'s No. 1 W. L. Price, 1,300 ft. from N and 600 ft. from E lines of Anna Melton Sur. ..... Drlg. 3,678 ft.
Humble Oil & Refining Co.'s No. 1 J. W. Turner, 990 ft. from N and 330 ft. from W lines of 104.5-ac. tract in Anna Melton Sur. ..... Set 6-in. csg. 3,720 ft.
H. L. Hunt's No. 1 A. Holt, 162 ft. from N and 337 ft. from E of A. Holt 40-ac. tract, S. P. Hollingsworth Sur. ..... Shut down 3,130 ft.
Albert Jones' No. 1 John Minnifee, 100 ft. from S and 1,000 ft. from W of Survey on 70-ac. tract, T. J. Walling Sur. ..... Shut down 2,100 ft.
C. C. Julian's No. 1 Motley, 780 ft. from N and 1,673 ft. from W of survey, J. T. McDaniels Sur. ..... Set csg.; T. D. 191 ft.
Kimbrough et al's No. 1 Weatherby, 300 ft. from N and 300 ft. from E, Robert Martin Sur. ..... Fishing 3,650 ft.
Leonard Petroleum Co.'s No. 1 Sanger Bros., 390 ft. from N and 350 ft. from W of survey, J. P. Meredith Sur. ..... Preparing to core 3,865 ft.
Luling Oil & Gas Co.'s No. 1 Alford, 800 ft. from N and 4,820 ft. from E lines of the I. G. Parker Sur. ..... Building derrick.
Ray Martin et al's No. 1 Russell, 600 ft. from N and 150 ft. from E lines of lease in T. J. Martin Sur. ..... Set 10-in. csg. 118 ft.
Marr et al's No. 1 Lowns, 1,200 ft. from most westerly E line and 3,150 ft. from S line of survey, W. G. Tuttle Sur. ..... Derrick.
Mass and Tucker's No. 1 Matthews, 3,344 ft. from N, 4,356 ft. from E, Dalines Cartimas Sur. ..... Fishing 3,300 ft.
H. C. McBride's No. 1 Sue Hale, 150 ft. from S and 150 ft. from W of Sue Hale 88-ac. tract, John Darley Sur. ..... Set 12½-in. csg. 212 ft.
McMurray's No. 1 Sam Stone, 1,700 ft. from N and 6,300 ft. from W of survey ..... Sand 3,665-75 ft.; set 6-in. csg. 3,665 ft.
Frank Melat's No. 1 Newton Orr, 300 ft. S of N line of 202½-ac. tract, William Tippett Sur. ..... Shut down 2,780 ft.
Nat Saddler's No. 1 Ed Sparks, 350 ft. from E, 150 ft. from S of survey, L. C. Riggs Sur. ..... Shut down 2,000 ft.
Pitts et al's No. 1 Freeman, 1,000 ft. N of S line and 1,000 ft. E of W line of 181-ac. tract, J. Watkins Sur. ..... Rig blew down.
Priest et al's No. 1 Mayfield, 155 ft. from N and W lines of 22-ac. lease in Daniel Clark Sur. ..... Location.
Rowe et al's No. 1 Maxwell, 855 ft. from E and 337 ft. from S of B. F. Maxwell 59-ac. tract, R. H. Pinney Sur. ..... Derrick.
Shaheen and Keeler's No. 1 H. L. Griffin, 550 ft. from W and 2,000 ft. from S of survey, Juan Ximenes Sur. ..... Derrick.
Suttles No. 2 Holland, 156 ft. from N and 152 ft. from W of Holland 41.7-ac. tract, M. J. Prue Sur. ..... Shut down 2,300 ft.
The Texas Company's No. 1 Turner, 242 ft. from S and 342 ft. from W of survey, T. H. Smith Sur. ..... Testing; top Georgetown lime 3,710-15 ft.

SMITH COUNTY

Bailey Gaunce et al's No. 1 S. S. Cook, 150 ft. from S and 150 ft. from W of S. S. Cook 20-ac. tract in 149-ac. tract, Juan Vargus Sur. ..... Shut down 2,560 ft.
Big Indian Oil Co.'s No. 1 Holland, 2,384 ft. from N and 1,446 ft. from E line of survey, Thomas Allen Sur. ..... Drlg. 3,770 ft.
G. B. Bunte, trustee's No. 1 A. S. Jarvis, 150 ft. from S and 150 ft. from W of 287-ac. tract, Juan Vargus Sur. ..... Rig up.
Bunte et al's No. 1 Atkinson, 1,000 ft. from S line and 1,000 ft. from N line of 330-ac. tract, Calloway Dean Sur. ..... Rig up.
Roy L. Carter's No. 1 T. O. Wright, 1,445 ft. from N and 182 ft. from E of survey, Juan Vargus Sur. ..... Drlg. 2,700 ft.
Cotton Belt Oil Co.'s No. 1 C. S. Jackson, 500 ft. from N and 500 ft. from W of 39.88-ac. tract, Henry Mickleborough Sur. ..... Drlg. 3,200 ft.
Deason Oil Co.'s No. 1 T. O. Wright, 1,440 ft. from N and 250 ft. from W of T. O. Wright 86-ac. tract, Juan Vargus Sur. ..... Moving in rig.
Dumas' No. 1 Cooke, 1,558 ft. SE along center line of Highway No. 64 from point where S. S. Cooke 17.6-ac. tract W line intersects highway and 942 ft. at right angles to road, James Jordan Sur. ..... Drlg. plug.
East Texas Refining Co.'s No. 1 Colored Methodist Church, James Jordan Sur. ..... Drlg. 510 ft.
Hancock and McCarthey's No. 1 J. C. Cross, 200 ft. from E of road and 200 ft. N of S line of survey on a 13-ac. tract, Burbridge Sur. ..... Derrick.
John Hoosier et al's No. 1 W. T. Roberts et al, 300 ft. from N and 277 ft. from W lines of 13⅛ acres in Juan Vargus Sur. ..... Rig up.
Imperator Oil Co.'s No. 1 I. M. Green, 140 ft. from S and 165 ft. from E line of Green 86.5-acre tract, NW of Overton and N and a little E of Big Indian No. 1 Holland ..... Shut down 1,845 ft.
Joiner et al's No. 1 W. W. Wright, 847.5 varas from E and 647 varas from S of NW Wright 235-ac. tract, Van Sickle Sur. ..... Shut down 4,210 ft.
Lawrence E. Ketch's No. 1 T. O. Wright, 700 ft. from E and 750 ft. from N of survey, Juan Vargus Sur. ..... Drlg. 2,991 ft.; top Pecan Gap 2,735 ft.
Magnolia Petroleum Co.'s No. 4 J. R. Wright, 1,458 ft. from N and 250 ft. from E of 87.9-ac. tract or lease, Juan Vargus Sur. ..... Rig up.
Magnolia Petroleum Co.'s No. 3 Loosier, 288 ft. E and 300 ft. N of NW cor. R. L. Henson 54-ac. tract in Juan Vargus Sur. ..... Shut down 3,650 ft.
Magnolia Petroleum Co.'s No. 3 Loosier, 300 ft. from S and 1,000 ft. from W lines of 126.7-ac. tract in J. Vargus Sur. ..... Derrick.
Magnolia Petroleum Co.'s No. 4 Loosier, 175 ft. from S and E lines of 127.7-acre tract in Juan Vargus Sur. ..... Drlg. 3,100 ft.
Magnolia Petroleum Co.'s No. 5 J. R. Knight, 150 ft. from N and 900 ft. from W of J. R. Wright 78-ac. tract, Juan Vargus Sur. ..... Rig up.
Magnolia Petroleum Co.'s No. 6 J. R. Wright, 2,400 ft. from E and 1,800 ft. from N of survey, Juan Vargus Sur. ..... Location.
Mid-Kansas Oil & Gas Co.'s No. 1 Thompson, 150 ft. from S and 150 ft. from W of 100-ac. lease, Isaac Moore Sur. ..... Derrick.
McCarthey and Hancock's No. 1 Nellie Taylor, 250 ft. out of SW cor. of 73-ac. Taylor tract, F. M. Taylor Sur. ..... Derrick.
McMillan's No. 1 Wright, 794 ft. from N and 171 ft. from W of T. C. Wright 86-ac. tract, Juan Vargus Sur. ..... Derrick.
M. M. Rowand et al's No. 1 Gibbons, 1,800 varas from W and 260 varas S of river (which is N line of survey), J. M. Garcia Sur. ..... Shut down 3,150 ft.
Ruffin and Williams' No. 1 Hamp Florence, 700 ft. from N and 200 ft. from E of 192.5-ac. tract, Barnes Clark Sur. ..... Coring 3,965 ft.
Sinclair Oil & Gas Co.'s No. 1 Mayfield, 2,194 ft. from N and 3,636 ft. from W of 376-ac. Mayfield lease, James Jordan Sur. ..... Rig up.
Sinclair Oil & Gas Co.'s No. 2-A Jarvis, 275 ft. from E and 203 ft. from S lines of Jarvis "A" lease in Juan Vargus Sur. ..... Rig up.

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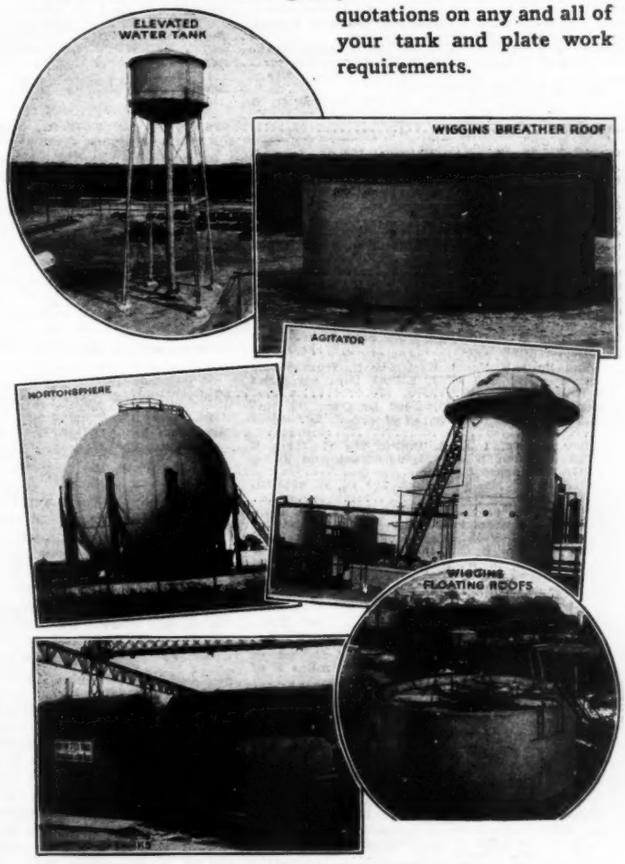

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Seattle....4323 Smith Tower
Los Angeles....1323 Pacific Mutual Bldg.
Havana, Cuba....Apartado 2507

HORTON TANKS

OGJ 7-16 Gray

Morrison's No. 1 I. Roy, 330 ft. N and E from SW cor. of 87ac. tract in Henry Cools Sur. ..... No report.
Sinclair Oil & Gas Co.'s No. 3-B Jarvis, 150 ft. from E and 917 ft. from S of "B" lease, Juan Vargus Sur. ..... Building derrick.
Sinclair Oil & Gas Co.'s No. 3-A Jarvis, 1,383 ft. from E and 1,388 ft. from S of "A" lease, Juan Vargus Sur. ..... Building derrick.
Sinclair Oil & Gas Co.'s No. 3-A Mayfield, 2,111 ft. from N and 2,305 ft. from E of survey, James Jordan Sur. ..... Rig up.
Sinclair Oil & Gas Co.'s No. 4-B Jarvis, 778 ft. from E and 2,332 ft. from S of "B" lease, Juan Vargus Sur. ..... Derrick.
M. T. Smith & Son's No. 1 T. O. Wright, center of 10-ac. Wiley lease in Juan Vargus Sur. ..... Rig up and shut down.
Sun Oil Co.'s No. 1-B Ritch, 300 ft. from N and 281 ft. from W lines of 54-ac. tract in Juan Vargus Sur. ..... Drlg. 1,350 ft.
Sun Oil Co.'s No. 1 J. A. Layne, 330 ft. from N and 330 ft. from E of 103.7-ac. tract or survey, Samuel Dexter Sur. ..... Sand 3,652-55 ft.; set csg.
The Texas Company's No. 3 Blackwell, 330 ft. from S and E lines of 100-ac. tract in James Jordan Sur. ..... Location.
The Texas Company's No. 1 J. W. Wilson, 300 ft. from N and 250 ft. from W lines of Wilson 125-ac. tract in David Collins Sur. ..... Location.
Mrs. S. O. Thompson's No. 1 S. S. Cooke, center of 5-ac. tract and lease in James Jordan Sur. ..... Rig up.
Vitek' No. 1 Irion, 150 ft. from S and E lines of 50-ac. tract in Mary Hughes Sur. ..... Set 12½-in. csg. 108 ft.

TITUS COUNTY

J. P. Flanagan's No. 1 Jim McGill, 450 ft. N of S line and 662 ft. E of W line of survey, H. C. Riggs Sur. ..... Location.
H. V. Cook's No. 1 M. C. Rogers, center of SW of Moore Sur. ..... Moving in rig.

UPSHUR COUNTY

Barkley et al's No. 1 J. B. Webb, 330 ft. from SE cor. of 31-ac. lease on 76-ac. tract, G. W. Hooper Sur. ..... Derrick.
Brennan and Wood's No. 1 Robertson, center of Robertson 41-ac. tract, Ira Stephenson Sur. ..... Shut down 3,691 ft.
Cockrell et al's No. 1 C. A. Lee, 150 ft. from S and 150 ft. E of 26½-ac. tract, W. L. Palmer Sur. ..... Derrick.
Callahan et al's No. 1 Lee R. Kay, 660 ft. from N and E lines of Charles O'Neal Sur. ..... Derrick.
Cranfill & Reynold's No. 2 A. D. Porter, 930 ft. S. and 450 ft. E of NW cor. 13½-ac. tract in G. W. Hooper Sur. ..... Set 6⅝-in. csg. 3,665 ft.; coring 3,672 ft.
Dumas et al's No. 1 A. O. Phillips, 150 ft. from N and 150 ft. from E of W 25.2-ac. of 75-ac. tract, S. Harrell Sur. ..... Skid rig.
A. H. Farver et al's No. 1 J. W. Free, 1,000 ft. N of SE cor. A. D. Porter tract and 465 ft. E at right angles, G. W. Hooper Sur. ..... Shut down 3,251 ft.
Gillett and Tarr's No. 1 Winnie and Wofford, 150 ft. from N and 150 ft. from E lines of 40-ac. tract, John L. Lowery Sur. ..... Moving in rig.
Home Oil Co.'s No. 1 F. D. Futrell, 150 ft. out of SW cor. and 520 ft. from E and 400 ft. from S line of 7.6-ac. tract, A. Lumbrara Sur., south of Gilmer ..... T. D. 2,396 ft.
McMahon and McCullough's No. 1 E. H. Hamilton, 200 ft. from E and 150 ft. from S of 88-ac. tract, M. Chandler Sur. ..... Shut down 2,740 ft.
McPhail and Smith's No. 1 Kay, 660 ft. from S and 660 ft. from W line of J. Elliott Sur., 1⅛ miles S of Big Sandy ..... Drlg. cement.
Meade Bros.' No. 1 Woofard, 2,400 ft. from SE line and 1,250 ft. from NW line of survey, J. L. Lowery Sur. ..... Location.
G. P. Mitcham's No. 1 J. B. Bland, 165 ft. from E and 650 ft. from S of 62½-ac. tract and 15-ac. lease, G. W. Hooper Sur. ..... Derrick.
Rogers and Rogers' No. 1 Walker, 300 ft. W of CEL of 28.1-ac. tract, McGee Sur. ..... Location.
Sorrels & Duffey's No. 1 J. W. Woodson, 300 ft. from E and 200 ft. S of survey, Isham Williams Sur. ..... Shut down 1,445 ft.
Sun Oil Co.'s No. 1 Vida Lee Loden, 200 ft. from N and 290 ft. from S and 150 ft. from W lines of 27.3-ac. tract in G. W. Hooper Sur. ..... Drlg. 2,785 ft.; top Pecan Gap 2,590 ft.
A. A. Trammell's No. 1 O. M. Victory, 150 ft. from E and 150 ft. from S of SW 100 acres of survey, E. A. J. Evans Sur. ..... Top Austin chalk 3,543 ft.; T. D. 3,558 ft.

VAN ZANDT COUNTY

Barton et al's No. 1 C. L. Hubbard, 600 ft. out of NE cor. of Hubbard 225-ac. tract, 3½ miles S of Canton, M. J. Cadena Sur. ..... Spudded and shut down.
Hart Petroleum Corp.'s No. 1 M. L. Cox, 1,756 ft. N of S line and 524 ft. E of W line of Cox 300-ac. tract in Nugent Headright Sur. ..... Shut down 1,952 ft.
H. Helms et al's No. 1 Bogue, 647 ft. W and 156 ft. S of SE cor. of J. M. Brown 70-ac. in Marshall University Sur., SE of Van ..... Shut down 3,098 ft.
Joiner et al's No. 1 J. S. Meeks, 330 ft. out of the NE cor. of the 330-ac. tract, A. Ducher Sur. ..... Fishing 2,548 ft.
Humble Oil & Refining Co.'s No. 1 L. A. Dowdle, 1,027 ft. N of S line and 150 ft. E of W line, William Daniel Sur. ..... Temp. abnd. 2,987 ft.
Kelly Oil & Gas Co.'s No. 1 Lemsford, center of Lemsford tract, John Conner Sur. ..... Shut down 2,300 ft.
Nell McMehory's No. 1 R. V. Murphy, 150 ft. from N and 150 ft. W of survey, H. Bailey Sur. ..... Shut down 2,450 ft.
W. P. Palmer et al's No. 2 W. P. Forster, 690 ft. from N and 450 ft. from E of SW cor. of Forster 151-ac. tract in the F. Montgomery Sur. ..... Shut down 3,000 ft.
W. A. Phillips et al's No. 1 Morris, 1,050 ft. S of N line and 350 ft. W of E line of center west of Norris 160-ac. tract in the C. L. Morris Headright Sur. ..... Shut down 3,075 ft.
Pure Oil Co.'s No. 2 W. F. Swain, 200 ft. N of S line and 200 ft. W of E line of lease in John Walling Sur. ..... Location.
Pure Oil Co.'s No. 2 J. M. Martin, 675 ft. W of E lines and 225 ft. S of N line of lease, Mund Gross Sur. ..... Drlg. 1,260 ft.
Pure Oil Co.'s No. 3 F. B. Smith, 469 ft. N of S line and 150 ft. W of E line of lease in John Walling Sur. ..... Drlg. 1,450 ft.
Van Oil Association's No. 1 Tankersley, 200 ft. from E and 1,000 ft. from S of farm, L. Landers Sur. ..... Washing to bottom at 2,530 ft.

WOOD COUNTY

Brennen and Wood's No. 1 L. W. Mings, 300 ft. from NW cor. of survey and tract, Moses Stripling Sur. ..... Location.
Loche and Clark's No. 1 A. C. Pick, 165 ft. S of NE cor. G. C. Reeves 25-ac. tract, Daniel Fuller Sur. ..... Shut down 2,008 ft.
Deep Rock Oil Co.'s No. 1 Maud Smith, center of Maud Smith S 40-ac. tract, L. Johnson Sur. ..... Derrick down; T. D. 4,100 ft.
Main Holding Co. and Thelma Wells' No. 1 Stewart, 1,938 ft. from NE and 2,898 ft. from E line of survey, E. Rehorse Sur. ..... Shut down 500 ft.
Vitek Oil Co.'s No. 1 Rosa Bogel, 350 ft. from N and 500 ft. from W of survey, Sarah English Sur. ..... Drlg. 2,500 ft.
M. O. Walmer Oil Co.'s No. 1 J. A. Ivey, center of 57-ac. tract, 2 miles NE of Mineola, A. Hamilton Sur. ..... Coring 3,735 ft.; top Pecan Gap 3,519 ft.
Wood County Oil & Gas Co.'s No. 1 Ivy Davis, 180 ft. from S line of 160-ac. tract, Sarah McDonald Sur. ..... Location.

WILDCAT OPERATIONS IN TEXAS PANHANDLE

(Continued from Page 32)

Jean Pet. Co.'s No. 1 Furneaux Bros., 330 ft. N and W, cor. SE, Sec. 200, Blk. B-2, H.&G.N. Sur. ..... S.D. 2,770 ft; P.B. 2,420 ft. and shot with 80 qts. 2,409-30 ft.; C.O.
Magnolia Pet. Co.'s No. 1 Heaston, NE cor. S½ NE, Sec. 164, Blk. 3, I.&G.N. Sur. ..... Rig on ground.
Nelson et al's No. 1 Crewa, 330 ft. S and E, NW, Sec. 12, Blk. 25, H.&G.N. Sur. ..... S.D. 2,619 ft.
Operators Royalty & Prod. Co.'s No. 2 Vanniman, 330 ft. S and W, E½ NE, Sec. 175, Blk. 3, I.&G.N. Sur. ..... T.D. 3,208 ft; 6,000,000 ft. gas 3,150-55 ft; drlg. 3,235 ft; estimated 30 bbls. daily at 3,208 ft.
Pulse-Shell Pet. Corp.'s No. 1 Simpson, SE NE, Sec. 140, Blk. 3, I.&G.N. Sur. ..... Drlg. 2,432 ft.
Steckoll & Reiger's No. 1 Davidson, 660 ft. N and W, Sec. 64, Blk. B-2, H.&G.N. Sur. ..... T.D. 3,173 ft; to run 5-in. liner; 2,000 ft. oil in hole.
Steckoll & Reiger's No. 1 Short, 330 ft. S and W, Sec. 17, B. E. Chaney Sur. ..... S.G. 2,110 ft; drlg. 2,750 ft; gauged 17,500,000 ft. gas 2,715 ft.
Sullivan & Ochiltree's No. 1-A Morse, 330 ft. S and W, N½ NE, Sec. 15, Blk. A-9, H.&G.N. Sur. ..... S.D. 2,636 ft.
Tarber's No. 1 Saunders, 330 ft. N and W, Sec. 3, Blk. 1, B.S.&F. Sur. ..... Location.

HUTCHINSON COUNTY

Danciger O. & R. Co.'s No. 1 Johnson, 330 ft. N and W, SE, Sec. 34, Blk. Y, A.&B. Sur. ..... Spudded and S.D.
Deal O. & G. Co.'s No. 2 Sanford, 330 ft. N and E of N 80 ac., S 160 ac., Sec. 31, Blk. 46, H.&T.C. Sur. ..... S.D. 450 ft.
Huber Prod. Co.'s No. 1 Johnson Bros. (Premier), 330 ft. N and E of W 60 ac., N 80 ac., NW, Sec. 3, Blk. Y, A.&B. Sur. ..... Big gas 2,330 ft. and 2,395 ft.; S.O. 2,974 ft; S.D. 3,016 ft.
Liner et al's No 1 Johnson Bros., 990 ft. S, 330 ft. E, W½ SE, Sec. 29, Blk. Y, A.&B. Sur. ..... Spudded and S.D.
Skelly Oil Co.'s No. 1 Johnson Bros., 660 ft. S and W, SE, Sec. 30, Blk. Y, A.&B. Sur. ..... S.D. 3,115 ft.
Stanolind O. & G. Co.'s No. 2-B Pitcher, 990 ft. S, 330 ft. E, W½ SW, Sec. 19, Blk. M-21, T.C.R.R. Sur. ..... Drlg. 475 ft.
Timms-Deatch's No. 4 Moore, 330 ft. N and W, Sec. 124, Blk. 4, I.&G.N. Sur. ..... Rig.

LIPSCOMB COUNTY

Okla. Public Service Co.'s No. 1 C. W. Jones, NE SW, Sec. 100, H.&T.C. Sur. ..... T.D. 5,003 ft.

LUBBOCK COUNTY

Center Oil Co.'s No. 1 Bowles Ranch ..... Small S.O. 1,133-40 ft; S.D. 4,167 ft.

MOORE COUNTY

Cloud & Dana's No. 1 Jones, 330 ft. N and E, SW, Sec. 169, Blk. 3-T, T.&N.O. Sur. ..... T.D. 3,471 ft; S.O. 3,465-69 ft; plugged back to 3,470 ft; shot with 100 qts. 3,430-70 ft; partially cleaned; flowed 5 bbls. per hr. with 12,000,000 ft. gas.
Interstate's No. 1 Nield, C NE, Sec. 18, Blk. 44, H.&T. C. Sur. ..... Location.
Magnolia Pet. Co.'s No. 1 Jones, 330 ft. N, 330 ft. E, Sec. 170, Blk. 3-T, T.&N.O. Sur. ..... Drlg. 2,660 ft.
Pollard et al's No. 1 Hall, 330 ft. S and E, NE, Sec. 131, Blk. 3-T, T.&N.O. Sur. ..... Rig on ground.
Sunray Oil Co.'s No. 1 Rupert, 660 ft. N, 330 ft. E, NW, Sec. 191, Blk. 3-T, T.&N.O. Sur. ..... Cellar.
Sunray Oil Co.'s No. 2 Jones, 330 ft. N and W, W½ SW, Sec. 164, Blk. 3-T, T.&N.O. Sur. ..... Rig on ground.
Texas Interstate P. L. Co.'s No. 1-23 Thompson, C N½ NE, Sec. 23, Blk. 44, H.&T.C. Sur. ..... Location.
Texas Interstate P. L. Co.'s No. 1-33 Sneed, C SW, Sec. 33, Blk. 6-T, T.&N.O. Sur. ..... Drlg. 2,284 ft.
Texas Interstate P. L. Co.'s No. 1-37 Sneed, C NW, Sec. 37, Blk. 6-T, T.&N.O. Sur. ..... Location.

MOTLEY COUNTY

Matador Oil Corp.'s No. 1 Owens, C NE, Sec. 10, Blk. G, B.&B. Sur. ..... S.D. 530 ft.

OLDHAM COUNTY

Amalgamated German-American Oil Corp.'s No. 1 Norton, 330 ft. S and E, Sec. 12, T.&N.O. Sur. ..... S.D. 400 ft.
Chambers et al's No. 1 Herring, CNL, Sec. 20, Blk. S, G.C.&S.F. Sur. ..... S.D. 800 ft.

ROBERTS COUNTY

Chicken Creek Oil Co.'s No. 1 Ledrick, 330 ft. N and W, Sec. 55, Blk. C, G.&M. Sur. ..... Fishing 850 ft.
Travis et al's No. 1 Cunningham, 330 ft. S and W, Sec. 74, Blk. M-2, H.&G.N. Sur. ..... S.D. 2,650 ft.

WHEELER COUNTY

Clarity et al's No. 1 Porter, 330 ft. S and W, SE, Sec. 2, Blk. A-9, H.&G.N. Sur. ..... Drlg. 1,625 ft.

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 32)

FISHER COUNTY

Stanolind Oil & Gas Co.'s No. 2 Steele, 1,200 ft. E and 330 ft. N of SW cor. Sec. 210, B.B.B.&C. Sur. ..... Top lime 1,600 ft.; good show oil 3,188-90 ft.; to drill in.
The Texas Company's No. 1 Jean, 380 ft. from E and 400 ft. S of Sec. 201, Blk. 1, B.B.B.&C. Sur. ..... Total depth 2,970 ft.; lowering 6⅝-in. casing.

GAINES COUNTY

Landreth Prod. Co.'s No. 1 Alley, 660 ft. from N and W of Sec. 2, Blk. A-30, P.S.L. Sur. ..... Rainbow show oil 2,965-75 and 3,030-45 ft.; 100,000 ft. gas at 4,306 ft.; drlg. 4,375 ft.
Texas Consolidated Oil Co. et al's No. 1 Jones, 2,310 ft. from NE Sec. 4, Blk. A-8, P.S.L. Sur. ..... Total depth 4,650 ft. (corrected).

GARZA COUNTY

Pandem Oil Corp.'s No. 1 Justice, 330 ft. from S and W of Sec. 12, Blk. 4, H.&G.N. Sur. ..... Spudded and shut down.
Penny & Posey's No. 1 Justice, 1,980 ft. from S and 1,650 ft. from E of Sec. 25, Blk. 6, H.&G.N. Sur. (3,500-ft. cable tool test) ..... Total depth 3,202 ft.; pulling casing.

HOWARD COUNTY

Green O. & R. Co.'s No. 1 Denman, 990 ft. from S and 2,310 ft. from W Sec. 14, Blk. 20, Twp. 1s, T.&P. Sur. ..... Spudded and shut down.

HUDSPETH COUNTY

Henshaw's No. 1 Love, C NE Sec. 9, Blk. 67½, P.S.L. Sur. ..... Shut down 600 ft.
Patillo & Welch's No. 1 Briggs, 300 ft. from S and W Sec. 13, Blk. 73, Twp. 7, T.&P. Sur. ..... Shut down 690 ft.
Theison's No. 1 University, 3,050 ft. from S and 2,225 ft. from E of Sec. 17, Blk. E ..... Spudded 35 ft. and shut down.

IRION COUNTY

Davis et al's No. 1 Suggs, 1,560 ft. from S and 925 ft. from W Sec. 3,081, Blk. 28, H.&T.C. Sur. ..... Shut down 1,700 ft.
Denny & Andrews' No. 1-A Tankersley, 200 ft. from S and 2,000 ft. from E of Sec. 709, J. P. Imhoff Sur. ..... Rigged up.
Ellis et al's No. 1 Nutt, 1,350 ft. from N and 450 ft. from E of Sec. 694, Kheikenholm Sur. ..... Spudding 50 ft. in lime.
Stanolind Oil & Gas Co.'s No. 1 Williams, 1,320 ft. from S and E of Sec. 1,196, T.T.R.R. Sur. ..... 300 ft. oil in hole from 4,155-63 ft.; shut down 5,950 ft.

Fox's No. 1 Horney, 1,520 ft. from N and 1,525 ft. from W Sec. 2, Blk. 3, H.&T.C. Sur. ..... Shut down 1,503 ft.
Straughn & Texannati Oil Co.'s No. 1 Tankersley, 150 ft. from S and 750 ft. from W of Sec. 4, Gonzales County School Land ..... Plugged back to 1,223 ft.; total depth 1,506 ft.
Straughn & Adkins Bros.' No. 1 Lee, 1,080 ft. from W and 420 ft. from N of Sec. 729, C. Kaiser Sur. ..... Drlg. 182 ft.

JONES COUNTY

Abers et al's No. 1 Burton, 150 ft. from S and 175 ft. from E of 43.4-acre tract in G. Martinez Sur. ..... Shut down 1,140 ft.
Barney & Duffy's No. 2 King, 3,700 ft. from N and 200 ft. from E. Subd. No. 18, M. Bueno Sur. ..... Drlg. 1,175 ft.

LOVING COUNTY

Adams et al's No. 1 Wichmann, 330 ft. from NE and 2,310 ft. from SE of Sec. 84, Blk. 1, W.&N.W. Sur. ... Drlg. 3,515 ft.
Ervin & Mahres' No. 1 Thrope, 2,310 ft. from E and 330 ft. from S Sec. 46, Blk. 53, T.&P. Sur. ..... Shut down 810 ft.
Slack's No. 1 Lynd, 990 ft. NE and 330 ft. SE of Sec. 3, Blk. 2, W.&N.W. Sur. ..... Drlg. 215 ft.
Eppenauer et al's No. 1 Johnson, 330 ft. from NW and SW of Sec. 86, Blk. 1, W.&N.W. Sur. ..... Drlg. 510 ft.
Falbre & Evans' No. 1 Dean, 330 ft. from NE and 990 ft. from NW Sec. 79, Blk. 33, H.&T.C. Sur. ..... Shut down 2,455 ft.
Lockhart & Co.'s No. 3 Bowen & Wells, 330 ft. from NE and SE of Sec. 92, Blk. 1, W.&N.W. Sur. ..... Shut down 4,050 ft.
Martin et al's No. 2 Ramsey, 990 ft. from SE and 2,310 ft. from SW Sec. 83, Blk. 1, W.&N.W. Sur. ..... Drlg. 3,268 ft.
Rush et al's No. 1 Wheat, 330 ft. from NW and SW Sec. 77, Blk. 1, W.&N.W. Sur. ..... Cellar.
Slagel Drlg. Co.'s No. 1 Cartwright et al, 2,310 ft. from S and 990 ft. from W Sec. 1, Blk. 57, Twp. 1, T.&P. Sur. ..... Total depth 3,182 ft.; top pay 3,175-80 ft.; cleaning out after shot.
W. A. Suddreth et al's No. 1 Capitola Pool, 2,970 ft. from NE and 990 ft. from NW Sec. 73, Blk. 33, H.&T.C. Sur. ..... Elev. 2,644 ft.; shut down 850 ft.
Tennant et al's No. 1 Martin, 990 ft. from NW and SW Sec. 66, Blk. 1, W.&N.W. Sur. ..... Shut down 1,400 ft.

MENARD COUNTY

Priest's No. 1 Sorrell, 1,000 ft. from E and 200 ft. from S cor. Sec. 132, E.L.R.R. Sur. ..... Shut down 2,860 ft.

PECOS COUNTY

Dittman's No. 1 Sanford, 330 ft. from NW and 1,650 ft. from NE of Sec. 55, Blk. 10, H.&G.N. Sur. ..... Location.
Honolulu Oil Co.'s No. 1 Webb, 3,140 ft. from N and 1,000 ft. from W of Sec. 105, Blk. OW, G.C.&S.F. Sur... Drlg. 2,910 ft.; small show oil 2,799-2,806 ft.
J. R. Miller et al's No. 1 Bennett, 359 ft. W of CWL Sec. 1, Blk. 119, G.C.&S.F. ..... Shut down 2,283 ft. for casing.
Perren Oil Co.'s No. 2 Eaton, S of E Sec. 27, Blk. 3, H.&T.C. Sur. ..... Fishing 1,765 ft.
Pure Oil Co.'s No. 1 Harrison, 2,310 ft. from N and 330 ft. from W of Sec. 203, Blk. 3, T.&P. Sur. ..... Shut down 5,000 ft.
Whitaker et al's No. 1 Mary Devlin, 150 ft. from N and 150 ft. from E Sec. 69, F. Hernandez Sur. ..... Shut down 430 ft.

REEVES COUNTY

Humble O'l & Ref. Co.'s No. 1 Bolmorhea Livestock Co., 1,320 ft. from N and 1,320 ft. from W Sec. 33, Blk. 5, H.&G.N. Sur. ..... Drlg. 2,163 ft.
Lee O. White et al's No. 1 Hershersor, 330 ft. from N and W lines of Sec. 5, Blk. 51, Twp. 10, T.&P. Sur.... Drlg. 4,735 ft.

RUNNELS COUNTY

Dutton et al's No. 1 Dean, 5,475 ft. from NE and 1,048 ft. from NW in J. Heil Sur. No. 519 ..... Shut down 2,335 ft.; fishing tools at 2,180 ft.

SCHLEICHER COUNTY

Eastland Oil Co.'s No. 1 Joe Tisdale, C Sec. 29, Blk. M, G.H.&S.A. Sur. ..... Drlg. 2,575 ft.
Wesner et al's No. 1 Nicks, 2,310 ft. from N and 2,362 ft. from E of Sec. 77, Blk. LL, T.C. Sur. ..... Top pay 4,000 ft.; filled up 2,000 ft. fluid in 8 days and swabbed down to 500 ft. fluid; fluid is one-third oil and two-thirds water.
George Wilson's No. 1 Page, Sec. 40, Blk. L, 1,290 ft. from N, 1,570 ft. from W, G.H.&S.A. Sur. ..... Shut down 5,053 ft.

SCURRY COUNTY

G. E. Dickman and R. B. Pender et al's No. 1 F. C. Davis, 1,000 ft. N and 1,770 ft. W of SE cor. of Sec. 275, Blk. 2, H.&T.C. Sur. ..... Shut down 5,100 ft.
Scurry County Oil Exchange's No. 1 Earnest, 2,310 ft. from N and W Sec. 68, Blk. 3, H.&G.N. Sur. ..... Spudded and shut down.
Seifert & Dib'e's No. 1 T. M. Blackburn, 2,310 ft. from N and 2,310 ft. from W line of Sec. 153, Blk. 97, H.&T.C. Sur. ..... Shut down 3,390 ft.
Simon & Brock et al's No. 1 Cruse, 2,310 ft. from S and E Sec. 119, Blk. 97, H.&T.C. Sur. ..... Show oil 1,798, 1,820, 1,850 ft.; drlg. 2,300 ft.

TERRELL COUNTY

Big Bend Oil Co.'s No. 1 Bassett, C NW Sec. 155, Blk. D, M.-K.-T. Sur. ..... Shut down 2,669 ft.
Keck Pecos Trust Co.'s No. 1 Hamilton, C Sec. 6, Georgetown Ry. Sur. ..... Shut down 3,150 ft.
Miller Bros.' No. 1 Allison & Burke, C NW cor. Sec. 10, Blk. 176, T.&P. Sur. ..... Shut down 120 ft.
Mid-Kansas Oil & Gas Co.'s No. 1 Goode, 2,152 ft. from E and 330 ft. from S Sec. 26, Blk. 161, G.C.&S.F. Sur... Shut down 6,120 ft.
Jones et al's No. 1 Pankenham, C SE NW Sec. 43, Blk. B-2, C.C.S.D.&R.G.N.G. Sur. ..... Depth corrected; drlg. 2,010 ft.

TOM GREEN COUNTY

Belding & Dutton's No. 1 Norsworthy, 2,640 ft. from S and 587 ft. from E of John McNeese Sur. ..... Shut down 760 ft.; show oil and gas 725 ft.
Mintex Oil Co.'s No. 1 Campbell Est., 446 ft. from S and 630 ft. from W of Sec. 180, Dist. No. 11, S.P. Sur. ... Shut down 1,994 ft.
Pratt & Hancock's No. 2 Lewis, 100 ft. N and 330 ft. E of most northerly SW cor. of Joshua S. Grant Sur. No. 2 ..... Shut down 200 ft.

UPTON COUNTY

Mintex Oil Co.'s No. 1 Lane, 2,310 ft. from N and 1,650 ft. from W Sec. 36, Blk. 1, M.-K.-T. Sur. ..... Total depth 2,290 ft.; 1,800 ft. oil in hole.
Rankin et al's No. 1 Cordova Union Land, 660 ft. from N and E Sec. 6, G.C.&S.F. Sur., 1¼ miles S of Rankin ..... Elev. 2,615 ft.; shut down 1,277 ft. for 10-in. casing.

VAL VERDE COUNTY

Independent Operators' No. 1 Whitehead, SE SE Sec. 10, Blk. 4, I.&G.N. Sur., elev. 1,175 ft. ..... Shut down 5,420 ft.
O. O. Owens' No. 1 Mills, Sec. 128, Blk. 1, I.&G.N. Sur., elev. 2,130 ft. ..... Shut down 6,780 ft.

WARD COUNTY

Bradford et al's No. 1 Carson, 990 ft. from NE and SE Sec. 26, Blk. 5, H.&T.C. Sur. ..... Spraying 10 bbls. oil per day from 3,142 ft.; shut down 2,195 ft.
Bradford & Abell's No. 2 Boogher, 1,160 ft. from NW and 800 ft. from SW Sec. 11, Blk. 5, H.&T.C. Sur. .... Drlg. 1,795 ft.
Bradford's No. 1 York, 330 ft. from NE and SE of Sec. 10, Blk. 34, H.&T.C. Sur. ..... Drlg. 1,080 ft.
Beckley et al's No. 1 Johnson, 4,140 ft. from NE and 990 ft. from SE Sec. 8, Blk. 32, H.&T.C. Sur. ..... Shut down for tubing; total depth 2,240 ft.
Buster Black's No. 1 Hall & Roberts, 990 ft. from NE and 1,650 ft. from NW Sec. 17, Blk. 33, H.&T.C. Sur... Total depth 1,715 ft.; running 5 3/16-in. casing.
Central Oil & Gas Co.'s No. 1 Barrow, 330 ft. from NW and 1,263 ft. from SW Sec. 55, J. W. Jackson Sur. ..... Total depth 865 ft.; underreaming 10-in. casing.
Gulf Prod. Co.'s No. 8 Hutchins, 2,310 ft. from S and 990 ft. from W of Sec. 3, Blk. F, G.M.M.B.&A. Sur... Top salt 1,265 ft.; drlg. 2,350 ft.
Hankinson et al's No. 1 Emery, 3,090 ft. from SE and 510 ft. from SE Sec. 26, Blk. 5, H.&T.C. Sur. ..... Drlg. 2,055 ft.
Moran & Miles' No. 1 Boogher, 3,603 ft. from NE and 1,303 ft. from SE Sec. 11, Blk. 5, H.&T.C. Sur. ..... Running 10-in. casing; total depth 200 ft.
O'Quinn et al's No. 1 Cummins, 4,300 ft. from NE and 330 ft. from SE of Sec. 11, Blk. 5, H.&T.C. Sur. .... Top salt 800 ft.; drlg. 1,675 ft.
R. F. Owen's No. 1 Lee, 1,344 ft. from NW and 4,533 ft. from SW Sec. 1, J. Howe Sur. ..... Location.
Pat Moran's No. 1 Sweatt, 1,470 ft. from SW and 150 ft. from NW Sec. 12, Blk. 5, H.&T.C. Sur. ..... Top pay 2,169 ft.; cleaning out at 2,170 ft.; shut in for pipe line connection.
Peck & Fuglar's No. 1 Merritt, 3,063 ft. from NE and 1,698 ft. from SE Sec. 11, Blk. 5, H.&T.C. Sur. ..... Drlg. 110 ft.
Rector Oil Co.'s No. 1 Smith, 1,320 ft. from N and E, Sec. 22, Blk. A, G.M.M.B.&A. Sur. ..... Top salt 940 ft.; drlg. 2,322 ft.
Rexford et al's No. 2 Johnson, 2,300 ft. from SE and 4,450 ft. from NE Sec. 11, Blk. 5, H.&T.C. Sur. ..... Location.
Shipley et al's No. 5 Hayzlett, 2,490 ft. from SE and 1,980 ft. from SW Sec. 17, Blk. 5, H.&T.C. Sur. ..... Shut down 2,520 ft.; 1,500 ft. oil in hole; waiting on tubing.
Simms Oil Co.'s No. 1 Himmel, 330 ft. from NE and 2,310 ft. from SE Sec. 30, Blk. B-29, P.S.L. Sur. ..... Top pay 2,246 ft. and 2,325 ft.; total depth 2,612 ft.; to test after tubing is run.
Sturm's No. 1 Jones, 330 ft. from SW and SE of Sec. 25, Blk. B-29, P.S.L. Sur. ..... Elev. 2,519 ft.; shut down 2,475 ft.; flowing 120 bbls. daily.
Shipley et al's No. 1 Monroe, 330 ft. SE SW Sec. 3, Blk. 1 ..... Shut down 4,545 ft.
White et al's No. 1 Burtner, 150 ft. from NE and 515 ft. from SE of Sec. 8, Blk. 32, H.&T.C. Sur. ..... Spudded July 2 and shut down.

WINKLER COUNTY

Liner Drlg. Co.'s No. 1 Campbell, 350 ft. from N and E cor. Sec. 2, Blk. B-5 ..... Shut down 4,640 ft.

EAST CENTRAL TEXAS

(Continued from Page 30)

cent water, but these have not reported, and the pipe line companies taking the oil from these wells have not objected to taking oil with such a small water content. However, the water is certain to increase in these wells, and treating barrels will have to be installed on them, as on other wells which are making a higher percentage of water.

Danger From Fires

The two wells which have been on fire, consuming the entire daily output of oil, are considered as dangerous elements for the two areas in which they are located, the Kilgore and Overton areas, due to the fact that such undiminished flows may be deemed sure to bring in water, or at least add to the dangers which already beset the wells, especially those dangerously near the water table, in the two areas.

There are 130 producers having bottom hole elevations within less than 20 feet of the water table, 110 of them in the Kilgore area, putting this pool in a serious situation, the 16 wells which have already made water, and now making a small percentage of water although choked, not lending any encouragement to the producers in the area, but establishing opinions that the salt water situation is a serious one, and will become more so. A committee of engineers is now studying the district, trying to formulate some plan for taking care of some of the thousands of barrels of salt water which will gradually gain headway in the field, but so far no scheme has been involved for handling the water. Rivers and streams cannot be used to divert the water; the sandy soil does not readily lend itself for storage, and methods used in other fields cannot be easily assimilated in this district which has its own terrain peculiarities. The salt water problem cannot easily be solved with oil selling at 10 cents per barrel or lower, and the small producer who can barely produce his oil at this price, without any impediments, will find himself in a dilemma when water begins to show up in his wells to any great extent.

Madden's No. 1 Mayfield in the D. Clark Survey, Kilgore Pool, is the first pumping well in that pool. The Magnolia Petroleum Co. is rigging up pumping equipment on its No. 2 Wills in the Hobson Survey, same area, but is not yet pumping it. The well flows but a small amount of oil, and will probably be put on pump immediately. Sinclair Oil & Gas Co.'s No. 1 Kennedy, in the same survey and pool, is also preparing to pump. These wells are on the eastern edge of the Kilgore Pool, northern Rusk County.

Dead Joiner Wells

A recent check of producers in the Joiner Pool, Rusk County, shows 29 wells to be dead, 11 going dead after shutting in because of lack of connections, eight are dead intermittently, swabbing bringing them back to flowing. There are 18 pumpers, two flowing and one pumping. One is flowing-starting to flow by use of air lift; 12 are flowing only when agitated. One is flowing by heads; 41 are flowing but have pumping equipment installed ready for pumping. Six are shut in for various reasons. This makes a total of 129 wells which have failed in production since they were completed, many having been completed for a potential of from 15,000 to 25,000 bbls. per day, showing how the pressure has been diminished in the field, and how the wells have fallen off. These wells are on the eastern side of the field, removed from the salt water menace, the bottom of the holes situated near the Georgetown lime.

The Manahan Drilling Co. made a record when drilling the Sinclair Oil & Gas Co.'s No. 1 Moncrief in the William Castleberry Survey, Lathrop area, Gregg County, in four and a half days.

Status of Injunctions

During the week Assistant Attorney General Upchurch issued a letter to all parties who had injunctions against the Railroad Commission's proration order which expired July 1; informing them that their injunctions were no longer in effect, and that they were now violators of the order issued July 2, providing they continue to run oil in excess of the terms of that order. However, this does not apply to the injunction of the McMillan Oil Corp. which is awaiting a decision in the Federal Court nor to the Danciger Oil & Refining Co. whose case is in the Supreme Court.

Lack of water for drilling purposes is becoming more acute every day due to lack of rainfall, and the vast number of wells being drilled. Many water wells have been drilled to the 600 and 800-foot level. These wells cost around $2,000 each, some being drilled by rotary equipment while others are being drilled with spudders.

Charley Cope is contemplating laying a water system to furnish wells drilling in southern Upshur County and northern Gregg, from two lakes located in the former county. If the proposed plans are carried out a combination 4 and 6-inch line will be laid from these lakes to supply the wells. Mr. Cope formerly was an independent operator and drilling contractor at San Angelo, but is now located at Tyler.

Two hundred and sixty-four barrels per well is the new allowable production from each 20-acre unit according to the Railroad Commission's order which limits the East Texas district to 250,000 bbls. per day. Leases containing 10 acres or less will be given an allowable of 132 bbls. and are classified as half units, while leases of over 10 acres are classed as full units. The Arkansas Fuel Oil

Co. and E. L. Chapman have injunctions against the new order. G. W. Hindman also has an injunction against the new order.

The Arkansas Fuel Oil Co. notified royalty owners this week that oil received under its new provision order, effective July 1, shall be paid for at the "weighted average price," the price to be not less than 10 cents per barrel, unless further advised. This order clearly proves the loss being incurred by royalty owners in the East Texas district because of the uncertain and erratic prices being paid for the crude in the producing areas in Smith, Rusk and Upshur Counties. These owners will be big losers unless production is curtailed and the price raised to compensate for the high gravity sweet crude being produced on their property.

Van Pool Potentials

The potential of the Van Pool, Van Zandt County, for the current proration period from July 7 to July 16, is placed at 492,736 bbls. per day, coming from 254 producing wells on 98.688 units. This is an increase of 10 wells during the past month. Outlet of the field is 43,000 bbls. daily, a decrease of 7,000 bbls. per day from the set outlet of 50,000 bbls. for the present period. This decrease is due to storage being filled, and is a temporary curtailment only.

SHIPMENTS FOR TRUNK LINE FOR EAST CENTRAL TEXAS
Week Ending July 7

Company, size, location—	Dy. av. runs
Arkansas Fuel Oil Co., 8-inch, Shreveport	30,000
Gulf Production Co., 6-8-inch, Port Arthur	30,002
Atlas Pipe Line Co., 8-inch, Shreveport	26,001
Humble Oil & Refining Co., 8-inch, Shreveport	23,349
Humble Oil & Refining Co., 8-inch, Jacksonville	5,700
Magnolia Petroleum Co., 10-inch, Center	29,801
Texas Pipe Line Co., 10-inch, Nacogdoches	52,330
Tidal Oil Co., 10-inch, Center Station	11,402
Total	198,635

SHIPMENTS TO LOCAL REFINERIES

Boone Refining Co., Arp.	365
Overton Refining Co., Overton	1,581
Beacon Oil & Refining Co., Henderson	1,795
East Texas Refining Co., Longview.	5,431
Slack Refining, Camps Switch	633
Taylor Refining Co., Tyler	5,989
Total	19,794

SHIPMENTS BY TANK CAR

Arkansas Fuel Oil Co.	47,978
Butler & Calhoun	24,560
Central Pipe Line Co.	35,791
Cranfill & Reynolds	0
Crown Pipe Line Co.	24,189
East Texas Refining Co.	7,000
F. & M. Transport Co.	37,822
Nat Hunter Oil Co.	68,740
Houston Oil Co.	23,062
Humble Oil & Refining Co.	37,914
Illinois Pipe Line Co.	11,309
Inland Waterways	24,805
Oriental Oil Co.	1,364
Pilot Oil Co.	175
Piolot Oil Co.	13,369
Piolot Oil Co.	238
Shell Petroleum Corp.	165,125
Simms Oil Co.	67,161
Sinclair-Texas	67,086
Texas Pacific Coal & Oil Co.	5,100
Toronto Pipe Line Co.	86,887
Woodley Petroleum Corp.	5,020
Total	754,595
Total distribution	973,024

COMPLETIONS IN EAST TEXAS

Gregg County

Vacuum Oil Co.'s No. 1 V. L. Goolsby, Pecan Gap 2,479-2,912 feet, Austin chalk 3,462 feet, sand 3,535-3,539 feet, initial production 825 bbls. through two 4-inch lines and casing open, total depth 3,539 feet. Sinclair Oil & Gas Co.'s No. 1 J. R. Williams, Pecan Gap 2,535-2,900 feet, Austin chalk 3,450-90 feet, sand 3,490-3,520 feet, initial production 220 bbls. first hour open through 2½-inch tubing, total depth 3,520 feet. Fain & McGaha's No. 1 W. A. Booknight, Pecan Gap 2,499-2,900 feet, Austin chalk 3,478-3,539 feet, sand 3,549-3,590 feet, initial production 135 bbls. in one hour, total depth 3,590 feet.

Humble Oil & Refining Co.'s No. 5 D. C. Johnson, Pecan Gap 2,495-2,935 feet, Austin chalk 3,500-3,553 feet, sand 3,595-3,603 feet, initial production 105 bbls. first hour on eleven-sixteenths-inch choke and 2½-inch tubing, total depth 3,603 feet. Magnolia Petroleum Co.'s No. 4 J. C. McKinley, Pecan Gap 2,490-3,050 feet, sand 3,631-3,642 feet, initial production 154 bbls. in five minutes wide open, total depth 3,642 feet. Wise & Jackson's No. 1 Rosa Corbin, Pecan Gap 2,550-2,965 feet, Austin chalk 3,550 feet, sand 3,576-3,625 feet, initial production 182 bbls. in one hour on one-half-inch casing choke, total depth 3,625 feet. Alco Royalty Co.'s No. 1 A. N. King, Pecan Gap 2,490-2,920 feet, Austin chalk 3,520 feet, sand 3,570-3,621 feet, initial production 126 bbls. through eleven-sixteenths-inch choke and 2½-inch tubing, total depth 3,621 feet.

Amerada Petroleum Corp.'s No. 1 W. E. and C. N. Bumpas, sand 3,539-3,583 feet, initial production 262 bbls. through 2½-inch tubing open, total depth 3,583 feet. W. W. Bradley's No. 1 M. O. Sheward, Pecan Gap 2,505 feet, Austin chalk 3,485-3,541 feet, sand 3,543-63 feet, initial production 72 bbls. in 15 minutes open tubing and casing, total depth 3,563 feet. Callahan & Thompson's No. 1 Mollie Fenn, sand 3,603-3,640 feet, initial production 512 bbls. in two hours through 2½-inch tubing, total depth 3,640 feet. Dillard Drilling Co.'s No. 1 W. E. Jones, Pecan Gap 2,397-3,005 feet, Austin chalk 3,572 feet, sand 3,613-58 feet, initial production 32 bbls. per hour through five-sixteenths-inch choke on 2½-inch tubing, total depth 3,658 feet. H. W. Elliott and others' No. 1 Thad Snoody, Pecan Gap 2,387-2,950 feet, Austin chalk 3,530-3,566 feet, sand 3,569-3,590 feet, total depth 3,590 feet.

Other Operations

Fain & McGaha's No. 1 E. W. Clements, top Pecan Gap 2,498-2,596 feet, Austin chalk 3,500-3,531 feet, sand 3,548-3,604 feet, initial production 235 bbls. per hour through 1-inch choke on 2½-inch tubing, total depth 3,604 feet. F. & M. Drilling Co.'s No. 1-B W. L. Blackstone, Pecan Gap 2,410-2,946 feet, Austin chalk 3,500-3,522 feet, sand 3,535-3,542 feet, initial production 203 bbls. first hour partly pinched 2½-inch tubing, total depth 3,592 feet. Humble Oil & Refining Co.'s No. 4 D. C. Johnson, Pecan Gap 2,468-2,890 feet, Austin chalk 3,489 feet, sand 3,568-3,584 feet, initial production 127 bbls. first hour on three-fourths-inch choke on 2½-inch tubing, total depth 3,584 feet. King & Massingill's No. 1 E. and E. Anderson, Pecan Gap 2,455-2,950 feet, Austin chalk 3,510-3,539 feet, sand 3,557-3,595 feet, no gauge, total depth 3,595 feet.

Magnolia Petroleum Co.'s No. 1 Rilchey, Pecan Gap 2,540-2,975 feet, Austin chalk 3,526-3,600 feet, sand 3,605-3,612 feet, initial production 535 bbls. wide open first hour, total depth 3,612 feet. Same company's No. 1 O. F. Smith, Pecan Gap 2,510-2,870 feet, Austin chalk 3,507-3,576 feet, sand 3,577-3,590 feet, initial production 640 bbls. first hour open, total depth 3,590 feet. Meek & King's No. 1 Harmony Grove School, Pecan Gap 2,485-2,952 feet, Austin chalk 3,668 feet, sand 3,676-3,698 feet, no gauge, total depth 3,698 feet.

Meridian Oil & Gas Co.'s No. 1 T. W. Lee, Pecan Gap 2,495-2,892 feet, Austin chalk 3,505-3,534 feet, sand 3,584-3,600 feet, initial production 140 bbls. first hour through eleven-sixteenths-inch choke on 2½-inch tubing, total depth 3,600 feet. Mid-Kansas Oil & Gas Co.'s No. 3 Jack Castleberry, Pecan Gap 2,335-2,920 feet, Austin chalk 3,505-3,555 feet, sand 3,574 feet, initial production 157 bbls. open through 2½-inch tubing, total depth 3,600 feet. Same company's No. 1 W. E. Jones, Pecan Gap 2,485-3,051 feet, Austin chalk 3,601 feet, sand 3,655-3,681 feet, initial production 200 bbls. first hour through 2½-inch tubing open, total depth 3,681 feet.

Pilot Oil Co.'s No. 1 L. S. Fishburn, Pecan Gap 2,430-2.850 feet, Austin chalk 3,443-66 feet. Sand 3,466-94 feet, initial production 1,500 bbls. per 24 hours pinched, total depth 3,494 feet. Stanolind Oil & Gas Co.'s No. 1 G. F. Meadows, Pecan Gap 2,460-3,031 feet, Austin chalk 3,655 feet, sand 3,697-3,712 feet, initial production 110 bbls. first hour on three-quarters-inch choke on 2½-inch tubing, total depth 3,712 feet. Same company's No. 2 J. E. Willhite, Pecan Gap 2,448-2,990 feet, Austin chalk 3,547-3,604 feet, sand 3,608-76 feet, initial production 211 bbls. in 1 hour on 2½-inch open tubing, total depth 3,676 feet.

Sun Oil Co.'s No. 1 J. C. McKinley, Pecan Gap 2,475-3,005 feet, Austin chalk 3,540 feet, sand 3,581-3,623 feet, initial production 110 bbls. on eleven-sixteenths-inch choke through 2½-inch tubing, total depth 3,623 feet. Same company's No. 2 G. W. Tate, Pecan Gap 2,388-2,923 feet, Austin chalk, 3,464-3,508 feet, sand 3,-513-45 feet, initial production 280 bbls. open through 2½-inch tubing, total depth 3,545 feet.

The Texas Company's No. 1 J. B. Boles, Pecan Gap 2,466-2,860 feet, Austin chalk 3,458 feet, sand 3,522-86 feet, initial production 120 bbls. in 1 hour on eleven-sixteenths-inch choke through 2½-inch tubing, total depth 3,586 feet. Same company's No. 1 E. M. Woods, Pecan Gap 2,480-2,915 feet, Austin chalk 3,470-3,510 feet, sand 3,536-81 feet, initial production 130 bbls. in 1 hour through 1½-inch choke through 2½-inch tubing, total depth 3,581 feet.

More Producers

C. S. Thomas' No. 1 C. B. Everett, Pecan Gap 2,310-2,890 feet, Austin chalk 3,444 feet, sand 3.489-3,523 feet, initial production 115 bbls. through 2½-inch tubing, total depth 3,523 feet. Atlantic Oil & Production Co.'s No. 1 Andrews, top sand 3,637 feet, Pecan Gap 2,575-2,978 feet, top Austin chalk 3,487 feet, initial production 120 bbls. per hour through three-quarters-inch tubing choke, total depth 3,652 feet. Byrd-Frost, Inc.'s No. 1 J. R. Watson, top sand 3,577 feet, Pecan Gap 2,620-3,008 feet, top Austin chalk 3,485 feet, initial production 110 bbls. per hour through three-quarters-inch tubing choke, total depth 3,626 feet.

John T. O'Neil, Pecan Gap 2,585-3,-019 feet, top Austin chalk 3,560 feet, initial production 120 bbls. per hour through three-quarters-inch tubing choke, total depth 3,645 feet, top sand 3,631 feet, total depth 3,645 feet. Shell Petroleum Corp.'s No. 2 John Douglass, Pecan Gap 2,607-3,032 feet, top sand 3,631 feet, initial production 128 bbls. per hour through three-quarters-inch tubing choke, total depth 3,642 feet.

Shell Petroleum Corp.'s No. 5 J. B. Watson, initial production 110 bbls. per hour through three-quarters-inch tubing choke from sand 3,582 feet, total depth 3,658 feet. C. A. Bryan's No. 1 Vernon, abandoned location. Sun Oil Co.'s No. 4 J. R. Beall, top sand 3,639 feet, initial production 105 bbls. per hour through three-quarters-inch tubing choke, total depth 3,645 feet. Whittle and Cavanaugh's No. 1 S. Smith, top sand 3,538 feet, initial production 126 bbls. per hour through three-quarters-inch tubing choke, total depth 3,565 feet. Cranfill & Reynolds' No. 2 Clayton heirs, Pecan Gap 2,500-2,933 feet, top Austin chalk 3,494 feet, top sand 3,543 feet, initial production 57 bbls. first 15 minutes through 1-inch tubing choke, total depth 3,585 feet. Sun Oil Co.'s No. 1 Ed Smith, top sand 3,631 feet, Pecan Gap 2,650-3.015 feet, top Austin chalk 3,525 feet, initial production 110 bbls. per hour through three-quarters-inch tubing choke, total depth 3,663 feet. Roberts Oil Co.'s No. 1 W. B. Goyne, abandoned location.

National Securities' No. 1 Vernon, Pecan Gap 2,575-2,936 feet, Austin chalk 3,524 feet, top sand 3,627 feet, dry and abandoned, total depth 3,637 feet. H. W. Elliott and others' No. 2 Godfrey, top sand 3,565 feet, Pecan Gap 2,557-2,980 feet, top Austin chalk 3,480 feet, initial production 140 bbls. per hour through 1-inch casing choke, total depth 3,600 feet. Barnsdall Oil Co.'s No. 1 D. Smith, Pecan Gap 2,562-2,952 feet, top Austin chalk 3,435 feet, top sand 3,587 feet, initial production 115 bbls. per hour through three-quarters-inch tubing choke, total depth 3,605 feet.

Rusk County

Anderson and Cameron's No. 1 Samp Stone, top Pecan Gap 2,780 feet, base 3,120 feet, top Austin chalk 3,528 feet, base 3,686 feet, sand 3,686-96 feet, initial production 125 bbls. per hour open through tubing, total depth 3,696 feet. Bridwell Oil & Gas Co.'s No. 1 Stone, top Pecan Gap 2,650-3,016 feet, top Austin chalk 3,438-3,579 feet, sand 3,620-44 feet, initial production 207 bbls. per hour open through tubing, total depth 3,644 feet. DeArmand's No. 1 L. P. Thrash, top Pecan Gap 2,699 feet, base 3,130 feet, top Austin chalk 3,575 feet, sand 3,740-63 feet, initial production 200 bbls. per hour open through tubing, total depth 3,788 feet. Golding's No. 3 Thompson, location abandoned.

Gulf Production Co.'s No. 2 Turner, top Pecan Gap 2,724 feet, base 3,120 feet, top Austin chalk 3,570 feet, base 3,735 feet, sand 3,735-50 feet, initial production 143 bbls. per hour open through tubing, total depth 3,750 feet. Same company's No. 4 Turner, top Pecan Gap 2,757 feet, base 3,140 feet, top Austin chalk 3,605 feet, base 3,773 feet, sand 3,773-87 feet, initial production 127 bbls. per hour open through tubing, total depth 3,781 feet. Hoosier and Big Indian Oil Co.'s No. 1 G. McIllroy, top Pecan Gap 2,711 feet, base 3,078 feet, top Austin chalk 3,595 feet, sand 3,741-54 feet, initial production 150 bbls. per hour through 1-inch casing choke.

Humble Oil & Refining Co.'s No. 2 Wheelis, top Pecan Gap 2,790 feet, base 3,234 feet, top Austin chalk 3,615 feet, base 3,784 feet, sand 3,784-89 feet, initial production 72 bbls. per hour through eleven-sixteenths-inch tubing choke, total depth 3,789 feet. H. L. Hunt's No. 2 H. E. Maxwell, top Pecan Gap 2,720 feet, base 3,195 feet, top Austin chalk 3,645 feet, sand and lime 3,770-89 feet, initial production 205 bbls. per hour open through tubing, total depth 3,830 feet. Alford and others' No. 1 W. L. Thrash, location abandoned. Coomb's No. 1 Fox, top Pecan Gap 2,508 feet, sand 3,830-45 feet, initial production 500 bbls. first hour and 35 minutes through 1-inch choke on tubing, total depth 3,845 feet. Dan Dillon and others' No. 1 W. H. Frederick, location abandoned.

Big Hourly Output

F. H. E. Oil Co.'s No. 2 Thompson, top Pecan Gap 2,762 feet, base 3,125 feet, top Austin chalk 3,499 feet, base 3,662 feet, sand 3,680-3,705 feet, initial production 135 bbls. per hour pinched through tubing, total depth 3,705 feet. Hoosier's No. 1-A Eaton, top Pecan Gap 2,750-3,055 feet, top Austin chalk 3,650 feet, sand 3,750-90 feet, initial production 155 bbls. per hour through 1-inch choke on casing, total depth 3,790 feet. Lam and others' No. 1 Deason, top Pecan Gap 2,705 feet, base 3,066 feet, sand 3,639-95 feet, initial production 240 bbls. per hour open through casing, total depth 3,740 feet. Lide and others' No. 4 Young, top Pecan Gap 2,656 feet, base 3,065 feet, top Austin chalk 3,512 feet, sand 3,701-17 feet, initial production 146 bbls. per hour open through tubing, total depth 3,734 feet. Lucy Petroleum Co.'s No. 2 Maxwell, top Pecan Gap 2,660 feet, base 3,100 feet, top Austin chalk 3,568 feet, base 3,616 feet, sand 3,686-3,708 feet, initial production 156 bbls. per hour through 1-inch tubing choke, total depth 3,713 feet.

Jim McMurray's No. 1 Fair, top Pecan Gap 2,681 feet, base 3,073 feet, top Austin chalk 3,475 feet, base 3,581 feet, sand 3,630-52 feet, initial production 360 bbls. per hour open through tubing, in 1 hour and 15 minutes, total depth 3,-652 feet. Pharis and Sample's No. 1 Deason, top Pecan Gap 2,660 feet, base 3,060 feet, top Austin chalk 3,503 feet, sand 3,640-50 feet, initial production 75 bbls. per hour through 2-inch tubing, total depth 3,695 feet. R. M. V. Oil Co.'s No. 1 J. B. Wilson, top Pecan Gap 2,640-2,958 feet, top Austin chalk 3,440 feet, base 3,515 feet, sand 3,601-27 feet, initial production 100 bbls. first 30 minutes through tubing, total depth 3,627 feet.

Shaw Oil Co.'s No. 2 Talliaferro, top Pecan Gap 2,733 feet, base 3,075 feet, top Austin chalk 3,526 feet, sand 3,679-3,750 feet, initial production 185 bbls. per hour through casing, total depth 3,750 feet. Sun Oil Co.'s No. 1 O. W. Knight, top Pecan Gap 2,662 feet, base 3,015 feet, top Austin chalk 3,468 feet, base 3,604 feet, sand 3,615-27 feet, initial production 60 bbls. per hour through one-half-inch tubing choke, total depth 3,-633½ feet. The Texas Company's No. 2

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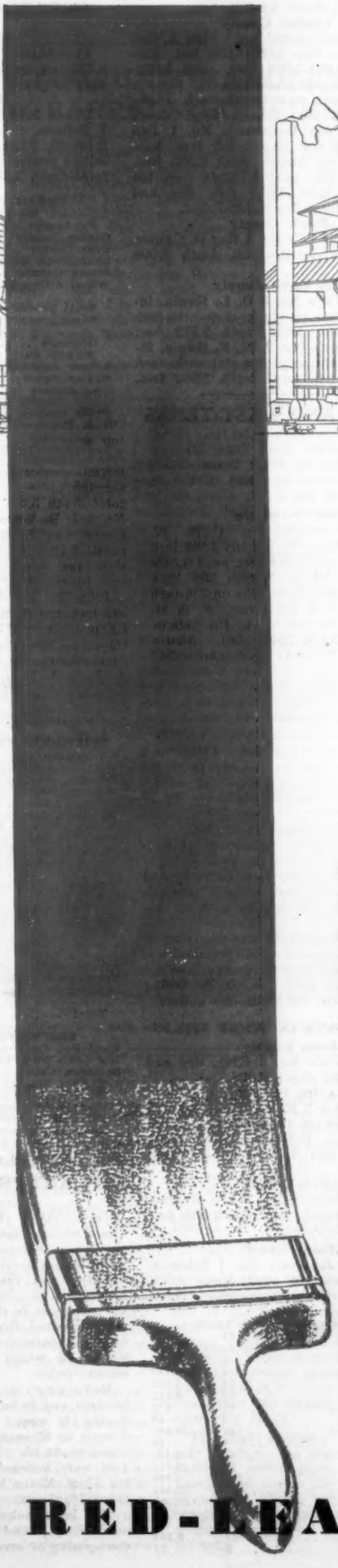

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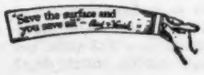


Blackwell, top Pecan Gap 2,770 feet, base 3,130 feet, top Austin chalk 3,532 feet, base 3,653 feet, sand 3,701-11 feet, initial production 135 bbls. per hour open through tubing, total depth 3,711 feet. Same company's No. 2 Stone, top Pecan Gap 2,660 feet, base 3,010 feet, top Austin chalk 3,510 feet, base 3,615 feet, sand 3,660-98 feet, initial production 150 bbls. per hour open through tubing, total depth 3,698 feet.

Tidal Oil Co.'s No. 2 Shaw, top Pecan Gap 2,668 feet, base Pecan Gap 3,076 feet, top Austin chalk 3,497 feet, sand 3,655-90 feet, initial production 504 bbls. per hour open through tubing and casing, total depth 3,698 feet. Trapshooter Reilly's No. 1 Thompson, top Pecan Gap 2,779-3,119 feet, top Austin chalk 3,546 feet, base 3,608 feet, sand 3,706-49 feet, initial production 80 bbls. per hour through three-quarters-inch tubing choke, total depth 3,749 feet. Ward Oil Co.'s No. 2 Finney, top Pecan Gap 2,667 feet, base 3,070 feet, top Austin chalk 3,551 feet, base 3,604 feet, sand 3,666-3,710 feet, initial production 85 bbls. per hour through open tubing, total depth 3,721 feet. Empire Gas & Fuel Co.'s No. 1 Leverett, top sand 3,670 feet, Pecan Gap 2,685-3,090 feet, top Austin chalk 3,585 feet, initial production 90 bbls. per hour through three-quarters-inch tubing choke, total depth 3,700 feet.

Humble Oil & Refining Co.'s No. 1 Mary Roberson, Pecan Gap 2,600-3,010 feet, top Austin chalk 3,464 feet, initial production 78 bbls. per hour through three-fourths-inch tubing choke, total depth 3,682 feet. Luling Oil & Gas Co.'s No. 1-A Brightwell, Pecan Gap 2,613-2,985 feet, top Austin chalk 3,581 feet, top sand 3,648 feet, initial production 375 bbls. per hour through open casing and tubing, total depth 3,683 feet. McDonald's No. 1 Brock, Pecan Gap 2,630-3,014 feet, top Austin chalk 3,490 feet, initial production 131 bbls. per hour through three-fourths-inch tubing choke, total depth 3,657 feet.

Magnolia Petroleum Co.'s No. 4 Bradbury, top sand 3,678 feet, initial production 132 bbls. in 15 minutes through three-fourths-inch tubing choke and open casing, total depth 3,681 feet. Same company's No. 2 C. C. Still, initial production 165 bbls. in 15 minutes through three-fourths-inch tubing choke and open casing from sand 3,630 feet, total depth 3,635 feet. Mid-Kansas Oil & Gas Co.'s No. 2 W. P. Moore, Pecan Gap 2,671-3,060 feet, top Austin chalk 3,515 feet, top sand 3,682 feet, initial production 200 bbls. per hour through open tubing, total depth 3,698 feet.

Shell Petroleum Corp.'s No. 3 Rosa Russell, Pecan Gap 2,645 feet, top Austin chalk 3,457 feet, top sand 3,576 feet, initial production 101 bbls. per hour through three-fourths-inch tubing choke, total depth 3,642 feet. Turman Oil Co.'s No. 4-A Brightwell, Pecan Gap 2,570-2,990 feet, top Austin chalk 3,448 feet, top sand 3,633 feet, initial production 105 bbls. per hour through three-fourths-inch tubing choke, total depth 3,638 feet. Houston Oil Co.'s No. 1 E. Thompson, Pecan Gap 2,676-3,030 feet, initial production 50 bbls. per hour through 1-inch tubing choke, total depth 3,693 feet.

Humble Oil & Refining Co.'s No. 29 Crim, Pecan Gap 2,645-3,099 feet, top Austin chalk 3,540 feet, top sand 3,675 feet, initial production 106 bbls. per hour through three-fourths-inch tubing choke, total depth 3,700 feet. Same company's No. 30 Crim, top sand 3,655 feet, Pecan Gap 2,660-3,090 feet, top Austin chalk 3,525 feet, initial production 85 bbls. per hour through three-fourths-inch tubing choke, total depth 3,688 feet. Same company's No. 10-A S. S. Laird, Pecan Gap 2,580-3,047 feet, top sand 3,643 feet, initial production 84 bbls. per hour through three-fourths-inch tubing choke, total depth 3,680 feet.

Red River County

J. R. Garland's No. 1 W. F. Brogan, location abandoned.

Smith County

H. L. Hunt's No. 1-B R. W. Fair, top Pecan Gap 2,730 feet, base 3,085 feet, top Austin chalk 3,519 feet, sand 3,674-79 feet, initial production 135 bbls. per hour open through tubing, total depth 3,679 feet. Magnolia Petroleum Co.'s No. 3 J. R. Wright, top Pecan Gap 2,700 feet, base 3,025 feet, top Austin chalk 3,505 feet, sand 3,681½-85½ feet, initial production 13,186 bbls. based on 15-minute gauge open through casing and tubing, total depth 3,685½ feet.

Upshur County

Taxman and others' No. 1 Mrs. A. Callahan, Pecan Gap 2,020-3,030 feet, Austin chalk 3,628-3,668 feet, sand 3,692-3,724 feet, initial production 135 bbls. in one hour on three-fourths-inch choke through 2½-inch tubing, total depth 3,724 feet. Joe Burnham's No. 1 Len Beck, top Pecan Gap 2,535 feet, base 2,895 feet, top Austin chalk 3,555 feet, base 3,661 feet, sand 3,733-48 feet, top Georgetown lime 4,050 feet, dry and abandoned, total depth 4,055 feet.

Bowie County

Devore-Midfield's No. 1 Roy B. Cooper, dry and abandoned, total depth 3,008 feet.

Van Zandt County

Pure Oil Co.'s No. 5 O. L. Swain, initial production on eleven-sixteenths-inch choke 60 bbls., total depth 2,772 feet. Same company's No. 2 W. F. Swain, initial production on eleven-sixteenths-inch choke estimated, total depth 2,952 feet.

NORTH AND WEST TEXAS

(Continued from Page 32)

man of the general West Texas advisory committee. Other members of the general committee are E. G. Allen, production superintendent of Shell Petroleum Corp.'s southwestern headquarters, who is also chairman of the Winkler County advisory committee; John R. Suman, Humble Oil & Refining Co., chairman of the Yates Pool committee, and W. L. Todd, chairman of the Ector County advisory committee.

A. B. Capers, formerly umpire in Winkler and Ector Counties and later in the Lathrop Pool of Gregg County, has been made umpire of the four combined areas in West Texas with offices in Midland. Capers will have two assistants to carry on details of the proration work.

An invitation to the Howard-Glasscock advisory committee to participate in the combined West Texas group was not accepted. M. B. Sweeney is chairman of the Howard-Glasscock advisory committee and E. E. Andrews is umpire.

The consolidation permitted abolishment of field proration offices maintained in each of the four districts and proration in each pool formerly was administered by one umpire and an assistant.

Mr. Barrows formerly was chairman of the Winkler County advisory committee, but with his selection as chairman of the general advisory group, operators elected Allen to equalize the committee duties.

COMPLETIONS IN WEST TEXAS

Jones County

Union Oil Co.'s No. 2 King, dry and abandoned, total depth 2,098 feet.

Loving County

Hoffman's No. 2 Ramsey, top salt 775 feet, top Delaware lime 4,205 feet, top pay 4,205 feet, initial production 150 bbls., total depth 4,219 feet, elevation 2,678 feet.

Reeves County

Biggs and Smith's No. 1 Lee Monroe, dry and abandoned, total depth 380 feet (total depth corrected).

Ward County

Gibson and Johnson's No. 1 Johnson, dry and abandoned, total depth 2,503 feet, top salt 720 feet, elevation 2,402 feet.

WEST TEXAS PRODUCTION
Week Ending July 11

County—	No. wells	Prod.
Andrews	3	0
Crane	377	14,783
Crockett	51	1,390
Ector	78	6,012
Fisher	11	573
Garza	2	10
Howard-Glasscock	543	29,091
Irion	9	70
Jones	86	1,422
Loving	41	3,612
Mitchell	111	1,802
Pecos	547	71,342
Reagan	295	25,566
Runnels	5	75
Scurry	5	0
Upton	261	5,191
Taylor	3	72
Ward	62	2,988
Winkler	596	42,002
Total production this week		206,001
Total production last week		206,772
Decrease		771

COMPLETIONS IN PANHANDLE DISTRICT

Gray County

Cree-Hoover's No. 1 Graham, top pay 3,225 feet, initial production 6 bbls. daily, shot 45 quarts, total depth 3,264 feet.

Moore County

Texas Interstate Pipe Line Co.'s No. 1 Zofness, first gas 2,108 feet, increase 2,145-85, 2,245, 2,288-90 and 2,340 feet, initial production 72,000,000 feet of gas, total depth 2,345 feet.

NORTH TEXAS PRODUCTION
Week Ending July 11

Panhandle district—	
Carson County	5,070
Gray County	41,779
Hutchinson County	10,270
Moore County	1,334
Wheeler County	187
Total production this week	58,640
Total production last week	66,792
Decrease	8,152
Wichita Falls district—	
Archer County	13,465
Baylor County	476
Clay County	602
Cooke County	1,850
Foard County	70
Haskell County	22
Jack County	2,160
Montague County	3,429
Throckmorton County	393
Wilbarger County	13,197
Wichita County	19,162
Young County	12,882
Total production this week	67,708
Total production last week	67,961
Decrease	253
Ranger district—	
Brown County	3,613
Callahan County	1,790
Coleman County	2,061
Comanche County	824
Palo Pinto County	348
Eastland County	3,055
Shackelford County	2,792
Stephens County	4,501
Total production this week	18,984
Total production last week	19,694
Decrease	710

SHIPMENTS THROUGH TRUNK LINES

Company, size and location—	Bbls.
Gulf, 10-inch, Houston	24,527
Humble, 2-8-inch, San Angelo	16,439
Humble, 10-12-inch, Comyn	45,497
Illinois, 2-8-inch, Del Rio	26,300
Magnolia, 8-inch, De Leon	520
Pasotex, 8-inch, El Paso	7,419
Shell, 10-inch, Healdton	29,925
Shell, 10-inch, Houston	8,616
Texas, 12-inch, Houston	23,301
Total	182,544

SHIPMENTS TO REFINERIES

Big Spring Ref. Co., Big Spring	852
Burford Ref. Co., Pecos	3,708
Cosden Ref. Co., Big Spring	7,685
Col-Tex Ref. Co., Colorado	8,033
Greatwestern Ref. Co., Pyote	2,569
Tonkawa Ref. Co., Pyote	1,605
Wickett Ref. Co., Wickett	252
Total	24,704

SHIPMENTS BY TANK CAR

Shell Pet. Corp. from McCamey	415
Big Lake from Texon	4,500
Southern Crude from Wickett	861
Total	5,776
Total daily average production	242,399
Total daily average distribution	213,024
Daily average to storage	29,375

PRICES ON GULF COAST PLANT PRODUCTS LOWER

HOUSTON, Tex., July 13.—Gulf Coast refinery markets at the opening of the week indicated further reaction to bearish influences which have been exerted from various sources. General reductions in crude were felt although the weakness in the refinery market was not attributed directly to that but rather to the increasing quantity of cheap East Texas oil which is being unloaded at coastal points.

Reductions in both fuel and Diesel bunkers and in bulk gasoline were posted during the week. Fuel bunkers were cut 5 cents to 65 cents and Diesel bunkers 5 cents to $1.35. Bulk gasolines in cargoes were lowered a quarter cent, making U. S. Motor 2⅞ cents and 375 end-point 3¾ cents.

The large volume of East Texas oil now being placed on the coast through the opening of several new pipe lines and the cheap price at which this oil is available has created an unusual market situation for gasolines in that North Texas gasolines virtually have been shut out of competition in this area and for export. There is such a large amount of cheap bulk gasoline offered on the coast that North Texas refiners with a long tank car haul cannot meet present coastal quotations. North Texas prices advanced slightly, indicating refiners in that district are not trying to meet present coastal prices and are placing their quotations in line with those of other market outlets.

Bulk fuel meeting full bunker C specifications was being quoted Monday more freely at 50 cents, indicating a decided weakening from the 60-cent quotation which sellers have attempted to hold. Gas oil also was soft, being offered from 2⅛ to 2⅜ cents. The weaker prices so far have failed to bring in any new business. The market on pale and red oils at the first of the week was uncertain. Sellers in this district have not been especially anxious to unload material but to meet competition of other areas have been forced to shade prices to a large extent. Material was offered freely from an eighth to a quarter cent below prevailing posted quotations in competitive territories and at varying quotations locally.

ETHYL OWNERS TESTING 20,000 BARRELS YEARLY

Developing its national network of testing and research stations, the Ethyl Gasoline Corp., owned jointly by General Motors Corp. and the Standard Oil Co. of New Jersey, announces that a new laboratory will be constructed at Baton Rouge, La.

One hundred refiners in the United States and Canada are now co-operating with the knock-testing laboratories of the Ethyl corporation in Kansas City, Mo., Tulsa, Okla., Yonkers, N. Y., and with two units in Detroit. The Baton Rouge laboratory will be completed in about three months, and will be the center of an area extending from Texas to Florida.

"The Ethyl system now tests 20,000 samples a year," said Dr. Graham Edgar, director of the Ethyl laboratories with headquarters at Yonkers. "The addition of the Baton Rouge plant and the enlargement of our Detroit fuel testing laboratory, which is now under way, will facilitate the distribution of antiknock fuel."

Outlining the growth of the corporation's technical and experimental research, Doctor Edgar explained the functions of the various Ethyl Gasoline laboratories, which are daily contributing information to users of motor fuels, making tests for the individual who finds a peculiar looking deposit in his carburetor, as well as for the oil refinery dealing in thousands of gallons of motor fuels yearly.

"Testing methods are undergoing constant modification and improvement in the central laboratory at Yonkers, where we also work out a standard practice for the entire system," Doctor Edgar declared. "Fundamental scientific research in motor fuels as well as some theoretical work is carried on. It is here that we determine the most efficient methods of keeping records and reports.

"Every sample received and tested has a complete 'case history,' whether it is sent in by a company desiring information, or is picked up from some country-side pump by one of our inspectors.

"We make a report to all refineries every six months based on our graphs which indicate the main characteristics of their product. We sample all types of motor fuels so that we have a comparative scale and know what is being sold throughout the country.

"All of the laboratories, which serve large contiguous areas, act as clearing houses for tests on gasolines, both base stock and mixed Ethyl Gasoline submitted by refiners. This makes it possible to keep Ethyl Gasoline, which is made by mixing Ethyl fluid with ordinary gasoline, under inspection and control."

Brief Items for Petroleum Refiners

Quaker State Corp. To Merge Nineteen Allied Companies

The Quaker State Oil Refining Corp. of Oil City has been organized to acquire through merger 19 companies engaged in the oil business principally in the Pennsylvania grade crude oil fields. Among the companies acquired are the Quaker State Oil Refining Co. of Oil City, Emlenton Refining Co. of Emlenton, Ohio Valley Refining Co., St. Marys, W. Va.; Independent Refining Co. of Oil City, McKean County Refining Co. of Bradford, James B. Berry Sons Co., Inc. of Oil City, Boston, Philadelphia, London and Hamburg; Enterprise Oil Co. of Buffalo, N. Y.; Sterling Oil Co. of Emlenton, and the Quaker State Refining Co. of California.

The purpose of merger is to place under one management refineries and marketing companies which have been for past years producing various refined oil products with particular reference to Quaker State motor oils.

The new consolidated company will have as its capital structure one class of stock totaling about 900,000 shares of no-par value. The present owners of stock of the participating companies will exchange their stock for shares of the parent company. No new financing is contemplated by corporation at this time.

Headquarters will be in Oil City. The officers include: President, H. J. Crawford, Emlenton; vice presidents, Samuel Messer and James D. Berry, Oil City; secretary and assistant treasurer, W. R. Reitz, Oil City; treasurer and assistant secretary, Charles Berry, Oil City. Directors are Samuel Messer, James D. Berry, Charles D. Berry, W. R. Reitz, H. H. Lowrie, E. P. Thoebold, Oil City; H. J. Crawford, G. B. Hunter, Emlenton; J. P. Glynn, Sistersville, W. Va.; A. P. J. Bayer, Erie, and T. B. Gregory, Pittsburgh.

The principal business of the company will continue to be the manufacture and distribution of Quaker State lubricating oils for which the company has outlets throughout United States and the principal foreign countries. The company's refineries operate exclusively on Pennsylvania grade crude oil. The lubricating oils are sold as 100 per cent Pennsylvania grade products. The Independent refinery at Oil City has a capacity of 1,800 bbls. daily; Emlenton at Emlenton, Pa., 2,000 bbls.; McKean County at Farmers Valley, Pa., 2,500 bbls., and Ohio Valley at St. Marys, W. Va., 2,000 bbls.

START ALLSTATE PLANT

The new skimming plant of the Allstate Refining Co., located at Overton in East Texas, will start operating this week. The plant which was built in approximately five weeks has a capacity of 3,000 bbls. daily. The plant output will consist of gasoline, kerosene, distillates, gas oil and fuel oil. The crude will be secured from nearby fields.

The Allstate company also has a plant at Thrall, Tex., which it will continue to operate. C. A. Middleton is handling the sales of the Allstate plants. He is also salesmanager of the Kent Refining Co. which has plants at Minerva and Angus, Tex.

COMPLETES STABILIZING PLANT

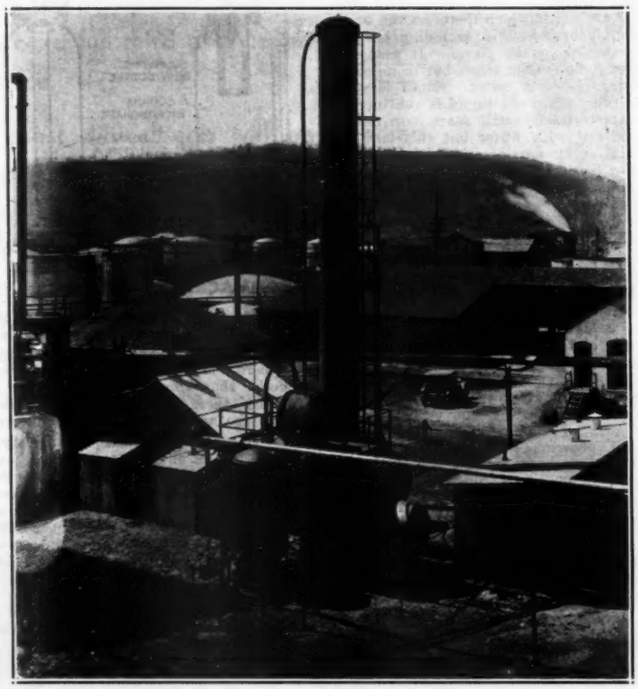
The Tidal Refining Co. has completed a large stabilizing plant at its Drumright, Okla., refinery. The plant is being used to rectify straightrun gasoline, cracked gasoline and natural gasoline.

NEW RECTIFYING UNIT HANDLES 3,000 BARRELS GASOLINE DAILY

A complete unit for the rectification of straightrun and cracked motor fuel has been in operation for several months at the Olean, N. Y., refinery of the Vacuum Oil Co. The unit was installed by the Foster Wheeler Corp. This unit was designed for processing 125,000 gallons of raw gasoline per day, taking overhead 10 per cent of the feed. Under actual operating conditions, it has been found that by taking overhead from 3 to 4 per cent, the vapor pressure is decreased from 13 to about 9 pounds Reid at 100° F.

All the pumps, instruments and controls are compactly located in a control house. There are two four-stage centrifugal pumping units connected to explosion proof motors. Each motor drives two pumps, one for raw feed, the other for column reflux, at 3,450 r.p.m. Flow from these pumps is maintained constant by recording differential rate controllers, the meters and valves both being situated in the control house. A central control board faces the pumps and carries indicating pressure gauges for the pump suction and discharge pressures; a recording gauge for column pressure; a

(Continued on Page 103)



General view of rectifying unit at Vacuum Oil Co.'s Olean refinery.

GASOLINE BY PIPE LINE IN CHICAGO THIS WEEK

Pipe line gasoline for the first time in the history of Chicago will be received there this week at the new Melrose station of the Great Lakes Pipe Line Co. The station is completed and is ready for the gasoline which is expected to arrive the first of the week.

The gasoline will be delivered by tank cars to the bulk stations of the companies affiliated with the Great Lakes company which have distribution in the Chicago area. Two 72-car loading racks have been completed at the terminal. The storage at the terminal consists of six 82,000-bbl. and four 30,000-bbl. storage tanks.

The line serving the Chicago terminal is a 6-inch line connecting to the main line at Des Moines, Iowa. Another line connecting to Minneapolis is also completed. The main line connects to the Oklahoma refineries of the Pure Oil Co., Phillips Petroleum Co., Continental Oil Co., Barnsdall Refineries, Inc., Mid-Continent Petroleum Corp. and the Eldorado, Kans., refinery of the Skelly Oil Co.

The main line extends through Kansas City to Des Moines with connecting lines to Omaha, Chicago and Minneapolis. The line to Omaha is under construction. There has been a steady increase in the pipe line shipments and with all terminals in operation it is expected that the line can be operating near capacity of 30,000 bbls. daily by late summer.

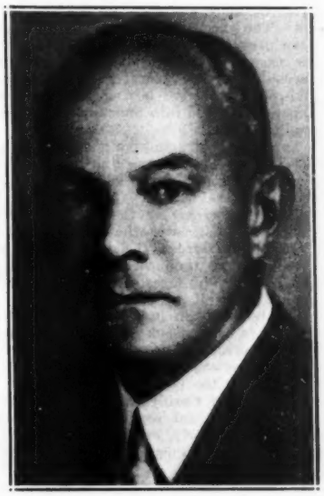
BELL BUYS PIPE LINE IN BURKBURNETT AREA

The Bell Oil & Gas Co. of Tulsa has purchased the pipe line gathering system of the Tidal-Western Oil Corp. located in the Burkburnett area of North Texas. The pipe line system has served the Tidal-Western refinery at Burkburnett for several years. Recently, the plant was shut down and it is understood that the owners do not expect to operate it again.

The Bell company will continue to take oil from the pipe line connections, paying a posted price. The oil will be transported across the Red River to the Grandfield, Okla., refinery of the Bell company. The company expects to increase the crude oil runs to stills of the refinery.

A. McD. GRAY ELECTED HEAD OF CORPORATION

A. McDowell Gray, who has been connected with the corporation for several years, was elected president of the Gray Processes Corp. at a meeting of the board



A. McDowell Gray

of directors held last week. He succeeds his brother, the late Thomas T. Gray.

Mr. Gray has been connected with the oil refining equipment business for the past 30 years and is widely known by refiners in all parts of the United States. He was one of eight brothers, several of whom have been engaged in the oil business. He attended Rutgers College and his first employment in the oil business was with the Tide Water Oil Co. at Bayonne, N. J. He engaged in various equipment enterprises and is the inventor of several processes including wax chillers and wax presses.

He joined the Gray Processes Corp. at the time it was organized and has been active in its management since that time. The corporation plans to expand its equipment service to the refining industry.

KANSAS INVESTIGATES IMPORTS

An investigation is now under way to determine the quantity of crude oil imported into Kansas from Oklahoma and other states and refined at Kansas refineries. The investigation is being conducted by the Kansas Public Service Commission which has taken the position that Kansas refineries should only operate with crude oil produced in Kansas. In the past, considerable crude oil has been imported from both Oklahoma and Texas by Kansas refineries. Several plants are located closer to Oklahoma fields than they are to Kansas production.

COMPLETE COLEMAN PLANT

A small refinery, capacity 200 bbls. per day, owned by Duke Baird, Howard Samuel, T. E. Brown and Leon L. Shield, all of Coleman, Tex., has been completed at that place and placed into operation, processing crude oil obtained from leases just outside of town. Products will be distributed through local retail stations and independent dealers. The company operating the plant is known as the Obar Refining Co. The plant may be enlarged to around 500 bbls. daily capacity later.

Manufacture of Natural Gasoline

New Type Contract Viewed Favorably By Gas Producers

A new type of contract for the purchase of casinghead gas by natural gasoline manufacturers is being received with favor by more and more buyers and sellers. The exceptionally low prices which have prevailed for natural gasoline over the past several months have worked a hardship on the natural gasoline manufacturers who were buying their gas on contracts entered into under normal price conditions.

The new contracts give a sliding scale based both on the gasoline content of the gas and the prices received by the manufacturers for the finished natural gasoline. The higher the gasoline content and the greater the price for the gasoline, the larger the percentage allowed the gas producer. Special provision is made in cases where plants are operated at well pressure.

The terms given in the following supplement to casinghead gas contracts have been accepted by a number of large buyers and sellers in the Mid-Continent Field during the past month:

Supplement to Casinghead Gas Contract

(A supplemental royalty schedule designed to properly evaluate casinghead gas under conditions of low prices for natural gasoline.)

1. When gasoline content is less than .75 gallon per 1,000 feet:

(a) When average price is 2 cents per gallon, or less, 5 per cent of the value of the gasoline.

(b) When average price is more than 2 cents, but less than 4 cents per gallon, 10 per cent of the value of the gasoline.

(c) When average price is 4 cents, but less than 6 cents per gallon, 15 per cent of the value of the gasoline.

(d) When the average price is 6 cents per gallon, or more, 20 per cent of the value of the gasoline.

2. When gasoline content is .75 gallon per 1,000 feet but less than 1.76 gallons per 1,000 feet:

(a) When average price is 2 cents per gallon, or less, 10 per cent of the value of the gasoline.

(b) When average price is more than 2 cents, but less than 4 cents per gallon, 15 per cent of the value of the gasoline.

(c) When average price is 4 cents, but less than 6 cents per gallon, 20 per cent of the value of the gasoline.

(d) When the average price is 6 cents per gallon, or more, 25 per cent of the value of the gasoline.

3. When gasoline content is 1.76 gallons per 1,000 feet, or above:

(a) When average price is 2 cents per gallon, or less, 15 per cent of the value of the gascline.

(b) When average price is more than

(Continued on Page 102)

LOWER TEXAS RATES

AUSTIN, Tex., July 13.—The Railroad Commission Monday announced the adoption of a policy treating casinghead or "natural" gasoline as a raw material and of giving it lower transportation rates than refinery gasoline. It promulgated a schedule of mileage favored by shippers. The new rates represent both decreases and increases in the former rates. They vary from 8 cents for distances under 10 miles to a top of 27½ cents per 100 pounds for all distances over 600 miles. No differentials are applied. Numerous local exceptions were provided.

The commission's order said that to impose the refinery gasoline rates on the casinghead gasoline would result in putting the small field plants out of business.

CARE OF FOAM TYPE EQUIPMENT IMPORTANT IN PLANT OPERATION

The Booster*

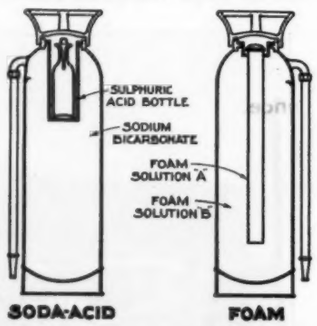
In oil or gasoline fires, the substance itself does not burn but these liquids vaporize at comparatively low temperatures and it is the vapors which may ignite from a spark or open flame and which then furnish the heat which continues vaporization of the liquid and thus feeds the fire. The main danger from oil and gasoline lies in the fact that the vapors, being heavier than air, stay close to the ground and may be carried some distance to a source of ignition before being so dissipated in the atmosphere as to preclude burning.

Foam type equipment is specifically recommended for such fires as it provides a blanket which floats on the burning liquid, eventually excluding the vapor fuel from the flame. It also has some slight cooling effect but in no sense comparable with water. Small fires of this type, when the liquid is confined in a comparatively small space, can be extinguished with water but this requires special spray nozzles and equipment, together with a higher pressure than is usually available on our hydrant systems, in the hands of an experienced operator. At present, the foam is so much more positive that we prefer it to the spray method.

For very small gasoline or vapor fires carbon tetrachloride or carbon dioxide extinguishers are very effective. Both have a blanketing effect which excludes oxygen and starves the flame but their range is short and the gas generated is soon dissipated, if any material draft is present. Both types, being nonconductors, are of particular value on electrical equipment, as they eliminate the personal hazard, prevent possible short circuiting of the equipment and in addition, are practically noninjurious to the finest electrical apparatus. Fires due to carburetor and gas line leaks may be effectually combatted with carbon tetrachloride, while gas jet flames may be easily handled with the carbon dioxide.

In view of the large number of 2½-gallon soda-acid and foam extinguishers in our plants, it may be well to discuss briefly their differences of construction and action, as they are similar in external appearance, although each may be identified by means of the manufacturer's label. These extinguishers differ mainly in the type of inner chamber, as shown by the accompanying illustration. When testing or charging, this difference is readily discernible at a glance and no confusion should result.

The inner chamber of the soda-acid type consists of a small metal cage in which is placed a glass bottle with a leaden stopple, while the inner chamber in the foam type is a long metal tube with a flat metal cap. In both types the inner chambers hang on a shoulder so constructed that when the extinguisher is inverted, there is a free flow of both liquids to facilitate the proper mixture.



As stated above, these extinguishers are classed as chemical equipment, and relying upon rapid chemical reaction for their effective operation it is most essential that they be properly charged at all times and to facilitate correct charges, manufacturers recharge packets containing just the right proportions of each ingredient are used.

Soda-Acid Charge

The charge in a soda-acid extinguisher consists of 1½ pounds of sodium bicar-

(Continued on Page 102)

*Published by the Standard Gasoline Co.

JAPANESE PETROLEUM TO BUILD NEW PLANT

WASHINGTON, D. C., July 11.—A plan to construct an additional plant for extracting gasoline from natural gas on its Kinsui Field in Taiwan has been announced by the Japanese Petroleum Co. and an entirely new chemical industry for Japan, the production of carbon black by the channel process, will be developed from natural gas.

At present, 25,000 gallons of gasoline are produced daily in Taiwan by treating 50,000,000 feet of gas. The new plant will have a daily capacity of 15,000 gallons of motor gasoline from 30,000 feet of gas. This will still further increase the current output beyond local demand but it is planned to ship the product into Japan proper. The effort to introduce up-to-date machinery is prominent in Japan and there is a ready market for American machinery of high efficiency.

A geological survey indicates that when present preservation policy is released, 150,000,000 feet of gas will be obtainable daily in Taiwan and preparations are being made to supply this product to sugar refineries and brick kilns, making necessary much additional equipment, much of which must come from abroad.

It is estimated the production of carbon black from natural gas will reach 3,600 pounds daily from 3,000,000 feet of gas. This will increase the annual output to 1,200,000 or about one-fourth of the annual importation of Japan.—C.E.K.

BUILD FIRST GASOLINE PLANT ON GULF COAST

HOUSTON, Tex., July 13.—The first gasoline plant on the Gulf Coast is being built in the Refugio Field by Harris, Shelton & Rowe of Pawnee, Okla. The plant is being built on the unit plan with only one unit planned at this time. This will have a capacity of 10,000,000 feet daily. The plant is located on the west line of Mission Drilling Co.'s 12½-acre O'Brien tract in the heart of the deep sand area.

Although a large volume of rich gas is available at Refugio and has been for several years, construction of gasoline plants never has been undertaken. Several companies have figured on installations and pooling of gas for one large "community" plant at one time was planned but these never were carried through. Previous to the recent choking in of Refugio deep wells and complete closing in of "gasoline" wells it was estimated that 200,000,000 feet of gas went to waste daily.

Standard Gasoline Company Employes Have Benefit Fund

The Standard Gasoline Co., which is a subsidiary of the Standard Oil Co. of California, operating natural gasoline plants in California for some time, has had a benefit fund as one of its activities to aid employes. The collection and distribution of the fund is entirely controlled by employes of the company.

The purpose of the fund is to provide relief in case of accident and death. Subscriptions are based entirely on the amount required to operate the fund from time to time. Following are the by-laws which regulate the operation of the fund:

ARTICLE 1

Name and Purpose

Section 1. The name of this voluntary organization shall be Standard Gasoline Employes Benefit Fund. Said organization is hereinafter referred to as the "Fund."

Section 2. The purpose of this fund is to provide immediate financial relief to the named beneficiary of a deceased member.

ARTICLE 2

Administration

Section 1. The administration of the fund shall be intrusted to a fund committee consisting of chairman, vice chairman, secretary-treasurer and three members. The chairman, vice chairman and secretary-treasurer shall be employes of the Los Angeles office; one member shall be chosen from the field office of each division—namely, Northern, Ventura and Southern divisions.

Section 2. The fund committee shall hold office until at least 10 per cent of the members of the fund shall signify their desire to elect a new committee.

Sec. 3. Vacancies occurring on the fund committee shall be filled by vote of the remaining members of the committee.

ARTICLE 3

Membership, Assessments and Benefits

Section 1. Any person who has been continuously in the employ of the Standard Gasoline Co. for 30 days is eligible to membership.

Section 2. An original contribution of $2 from each member will create two funds. When the death of a member occurs, the prior fund will be paid out in accordance with the instructions of the beneficiary named by the deceased member. A contribution of $1 by each member will then be made within a period of 30 days after due notification by the secretary, thus establishing a new fund. All subsequent funds are to be received and paid out in the same manner.

Section 3. A member who after making the first contribution, fails to make contribution to subsequent funds within the time limit set forth, after due notice, shall forfeit his remaining rights in the fund and shall cease to be a member upon the disbursement of the last fund to which he has contributed. Members may be reinstated at the option of the fund committee.

Section 4. A member ceases to participate in this fund upon leaving the service of this company except as specified in Section 7 and 10 of this article.

Section 5. No refund of a contribution shall be made under any circumstances.

Section 6. The fund shall not be a part of the estate of a deceased member and shall not be payable to his personal representative, but shall be payable only to such person as has been named beneficiary. If a member should die without having named a beneficiary, the secretary-treasurer may at the discretion of

(Continued on Page 102)

These facilities mean FINE WORK—FAST DELIVERY

THE Limbert pipe bending shop, with abundant capacity, makes prompt delivery certain. But more than mere bigness, this unusual plant incorporates the most highly developed methods for accurate quality work. The equipment and methods used here are the result of a full third of a century of pipe fabricating experience.

In this shop your most difficult job will be handled skillfully and promptly. The experienced engineers who design the material, and the mechanics who man the shop, know exactly what they are doing. Limbert facilities include the most modern specialized equipment for every phase of pipe and fitting fabrication in steel, iron, or welded construction. Every type of high pressure, high temperature pipe joint can be produced promptly.

LIMBERT PIPING

GEO. B. LIMBERT & CO.

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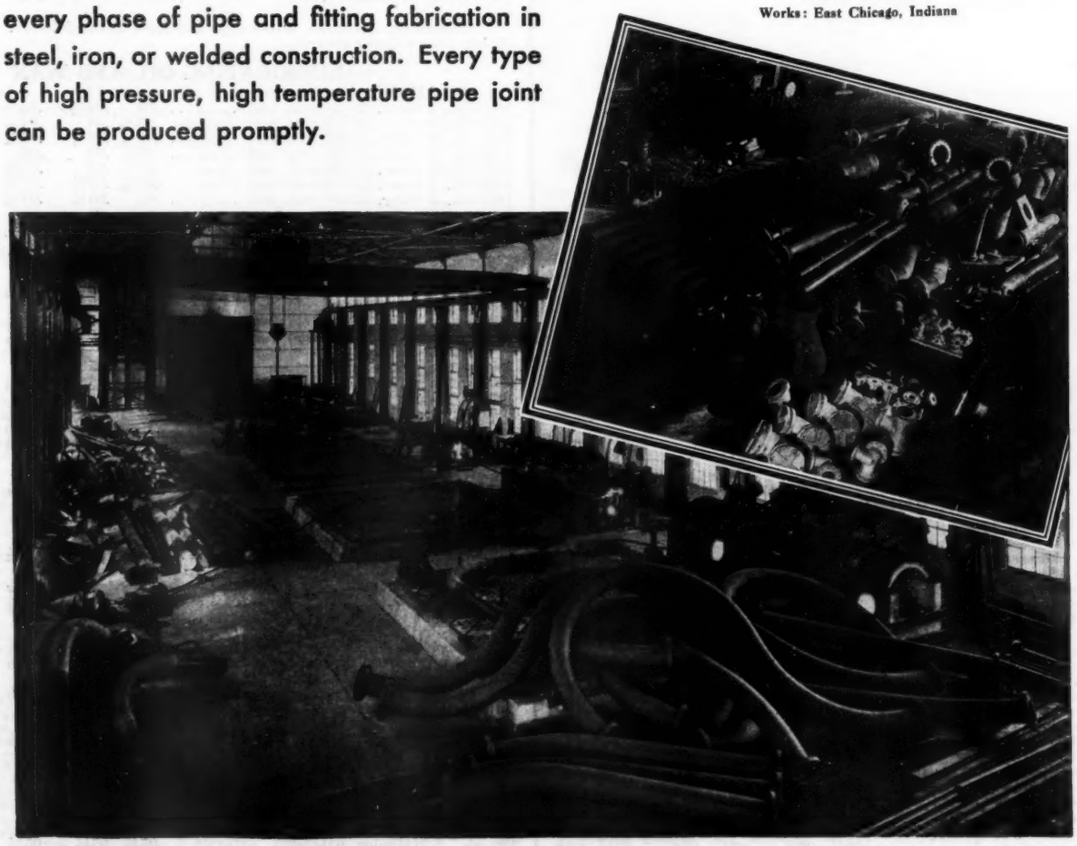
St. Louis, Mo. Kansas City, Mo.
Detroit, Michigan
Works: East Chicago, Indiana



REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

GASOLINE AND NAPHTHA

	July 14		July 7		June 30	
OKLAHOMA (Group 3)—						
50-52 450 endpoint	.02½	.02⅝	.02½	.02⅝	.02⅜	.02½
56-58 450 endpoint	.02½		.02⅜	.02½	.02¼	.02½
58-60 437 endpoint (U. S. Motor)	.02¾	.03	.02¾	.03	.02⅜	.02⅝
60-62 437 endpoint	.02¾	.03	.02¾	.03	.02⅜	.02¾
60-62 400 endpoint	.03	.03⅛	.02⅞	.03⅛	.02⅝	.02⅞
64-66 375 endpoint	.03⅛	.03¼	.03	.03⅛	.03	.03⅛
68-70 360 endpoint	.03¼	.03⅜	.03⅛	.03¼	.03⅛	.03¼
64-66 437 endpoint (blend)	.02½	.02⅝	.02¼	.02½	.02¼	.02½
NORTH TEXAS—						
50-52 450 endpoint	.02½		.02⅜	.02½	.02¼	.02½
58-60 450 endpoint	.02½		.02⅜	.02½	.02⅛	.02¼
58-60 437 endpoint (U. S. Motor)	.02⅝	.02¾	.02½	.02⅝	.02¼	.02½
60-62 400 endpoint	.02⅞	.03	.02⅝	.02¾	.02½	.02¾
64-66 390 endpoint	.03	.03⅛	.02¾	.03	.02⅝	.03
64-66 375 endpoint	.03⅛		.03	.03⅛	.02⅞	.03⅛
68-70 360 endpoint	.03⅛	.03¼	.03⅛	.03¼	.03	.03¼
64-66 437 endpoint (blend)	.02½		.02¼	.02½	.02¼	.02½
***NORTH LOUISIANA—**						
58-60 437 endpoint (U. S. Motor)	.03	.03⅛	.02¾	.03	.02¾	.03
***ARKANSAS—**						
58-60 437 endpoint (U. S. Motor)	.03	.03⅛	.02¾	.03	.02¾	
PENNSYLVANIA—						
52-54 Naphtha	.04¼		.04¼		.04¼	
54-56 Naphtha	.04⅜		.04⅜		.04⅜	
58-60 Gasoline	.04⅜		.04⅜		.04⅜	
60 Gasoline	.04½		.04½		.04½	
62 Gasoline	.05	.05¼	.05	.05¼	.05	.05¼
64 Gasoline	.05⅛		.05⅛		.05⅛	
68-70 350 endpoint gasoline	.05¼	.05½	.05¼	.05½	.05¼	.05½
CALIFORNIA—						
†54-58 437 endpoint (U. S. Motor) domestic	.04½	.06	.04½	.06¼	.05	.06½
†58-60 400 endpoint domestic gasoline	.04¼	.06	.04¼	.06	.04½	.06¼
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 endpoint (Naphtha)	.02⅜	.02⅝	.02¼	.02½	.02¼	.02½
58-60 437 endpoint (U. S. Motor)	.02⅜	.03	.02½	.02⅞	.02¼	.02½
60-62 400 endpoint	.02⅞	.03⅛	.02¾	.03	.02½	.02⅞
64-66 375 endpoint	.03¼	.03⅜	.03⅛	.03¼	.02¾	.03
64-66 437 endpoint (blend)	.02¼	.02⅝	.02⅛	.02¼	.02⅛	.02¼
68-70 360 endpoint	.03¼	.03½	.03¼	.03½	.03	.03¼
GULF COAST (Export)—						
58-60 U. S. Motor	.03½		.03½		.03½	
60-62 400 endpoint	.03⅝		.03⅝		.03⅝	
61-63 390 endpoint	.03¾		.03¾		.03¾	
64-66 375 endpoint	.03¾		.03¾		.03¾	

*Louisiana, Arkansas and Mississippi delivery. †For local consumption.

NATURAL GASOLINE

	July 14		July 7		June 30	
OKLAHOMA (Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.02⅛		.02		.01⅞	.02
Grade AA, 80-87.9, 375 e.p., rec. 90%	.02		.01¾		.01⅝	
Grade B, 76-83.9, 375 e.p., rec. 85%	.01¾		.01⅝		.01½	
Grade BB, 84-92, 375 e.p., rec. 85%	.01¾		.01½	.01⅝	.01½	
Grade C, 80-92, 375 e.p., rec. 78%	.01¾		.01½	.01⅝	.01½	
NORTH TEXAS—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.01⅞	.02	.01¾	.02	.01¾	.02
Grade AA, 80-87.9, 375 e.p., rec. 90%	.01⅝	.01¾	.01⅝		.01⅜	.01½
Grade B, 76-83.9, 375 e.p., rec. 85%	.01⅝		.01½		.01½	
Grade BB, 84-92, 375 e.p., rec. 85%	.01⅝		.01⅝		.01⅝	.01½
Grade C, 80-92, 375 e.p., rec. 78%	.01⅝		.01⅝		.01⅝	
NORTH LOUISIANA—						
Grade AA, 80-87, 375 e.p., rec. 90%	.02		.01¾		.01¾	
Grade BB, 84-92, 375 e.p., rec. 85%	.01¾		.01⅝		.01½	
Grade C, 80-92, 375 e.p., rec. 78%	.01¾		.01⅝		.01½	
CALIFORNIA—						
75-78 375-390 endpoint	.03¼	.04¼	.03¼	.04¼	.03¼	.04¼
CHICAGO DISTRICT (Based on Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.02⅛		.02		.01⅞	.02
Grade AA, 80-87.9, 375 e.p., rec. 90%	.02		.01¾		.01⅝	
Grade BB, 84-92, 375 e.p., rec. 85%	.01⅝		.01⅝		.01½	

BURNING OIL

	July 14		July 7		June 30	
OKLAHOMA (Group 3)—						
41-43 water white kerosene	.01⅞	.02	.01⅞	.02	.01⅞	.02
42-44 water white kerosene	.02	.02¼	.02	.02¼	.02	.02¼
NORTH TEXAS—						
41-43 water white kerosene	.01¾	.02	.01¾	.02	.01¾	.02
40-41 water white kerosene	.01¾		.01¾		.01¾	
***NORTH LOUISIANA—**						
41-43 water white kerosene	.02½		.02½		.02½	
***ARKANSAS—**						
41-43 water white kerosene	.02½		.02½		.02½	
PENNSYLVANIA—						
43 Kerosene prime white	.03⅝		.03⅝		.03⅝	
45 Kerosene water white	.03⅝	.03¾	.03⅝	.03¾	.03⅝	.03¾
46 Kerosene water white	.03⅞	.04	.03⅞	.04⅛	.03⅞	.04⅛
CALIFORNIA—						
38-40 water white Kero. (high burning test)	.04	.05½	.04	.05½	.04	.05½
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white kerosene	.02	.02⅛	.02	.02⅛	.02	.02⅛
42-44 water white kerosene	.02⅛	.02¼	.02⅛	.02¼	.02⅛	.02¼
GULF COAST (Export)—						
41-43 prime white	.03½		.03½		.03½	
44 prime white	.03½	.03¾	.03½	.03¾	.03½	.03¾

*Louisiana, Arkansas, Mississippi and East Texas delivery.

FUEL OIL

	July 14		July 7		June 30	
OKLAHOMA (Group 3)—						
Below 18 gravity Fuel Oil, per bbl.	.25	.30	.25	.30	.25	.30
18-22 Fuel Oil, per bbl.	.27½	.35	.27½	.35	.27½	.35
20-22 Fuel Oil, per bbl.	.30	.35	.30	.35	.30	.35
22-26 Fuel Oil, per bbl.	.30	.35	.30	.35	.35	.40
24-26 Fuel Oil, per bbl.	.35	.40	.35	.40	.40	.45
26-30 Fuel Oil, per bbl.	.40	.45	.40	.45	.45	.50
28-30 Fuel Oil, per bbl.	.40	.45	.40	.45	.45	.50
32-36 Gas Oil (industrial)	.00¾	.01	.00¾	.01	.00¾	.01
32-36 Gas Oil (straw color, high cold test)	.00¾	.01	.00¾	.01	.00¾	.01
32-36 Gas Oil (straw color, low cold test)	.01¼	.01¼	.01¼	.01¼	.01¼	.01½
36-38 Distillate	.01⅛	.01⅜	.01¼	.01⅜	.01¼	.01⅜
38-40 Straw Distillate	.01¼	.01⅜	.01¼	.01¾	.01⅜	.01¾

Note—Fuel oils over 40 cold test generally 5 to 10 cents per barrel less.

NORTH TEXAS—						
Below 20 gravity Fuel Oil, per bbl.	.17½	.25	.20	.25	.20	.25
24-26 Fuel Oil, per bbl.	.22½	.35	.25	.35	.25	.35
32-36 Gas Oil (industrial)	.00¾	.01	.00¾	.01	.00¾	.01
38-40 Straw Distillate	.01⅜	.01¼	.01¼	.01½	.01¼	.01½
***NORTH LOUISIANA—**						
18-20 Fuel Oil, per bbl.	.50	.60	.50	.60	.50	.60
30-32 Gas Oil (low cold test)	.01¾	.02	.01¾	.02	.01¾	.02
***ARKANSAS—**						
33-36 Distillate	.02	.02¼	.02¼	.02½	.02¼	.02½
30-32 Gas Oil	.01¾	.02	.01¾	.02	.01¾	.02
16-22 Refinery Fuel Oil, per bbl.	.50	.55	.50	.55	.50	.55
GULF COAST (South Texas)—						
Gas Oil	.02⅛	.02¾	.02½	.02¾	.02½	.02¾
Bunker C Fuel (cargo lots), per bbl.	.55	.60	.60		.60	
Bunker C Fuel (small lots)	.65		.70		.70	
PENNSYLVANIA—						
30-34 Fuel Oil	.02½		.02½		.02½	
36-40 Fuel Oil	.02½		.02½		.02½	
CALIFORNIA—						
42-45 480 endpoint engine distillate	.04¼	.06	.04¼	.06	.04½	.06
15-19 Fuel Oil, Bunker (at tidewater), bbl.	.60	.80	.60	.80	.60	.80
15-19 Fuel Oil (cargo lots, at tidewater), bbl.	.55	.75	.55	.75	.55	.75
†15-19 Fuel Oil, f.o.b. tank cars	.40	.75	.35	.75	.35	.75
27 plus Diesel, per bbl.	.70	.95	.70	.95	.70	.95
30-34 Gas Oil	.70	1.00	.70	.95	.70	.95
CHICAGO DISTRICT (Based on Group 3)—						
18-22 Fuel Oil, per bbl.	.15½	.25	.20	.25	.20	.25
22-26 Fuel Oil, per bbl.	.22½	.25	.25	.30	.25	.30
28-30 Fuel Oil, per bbl. (zero)	.35	.37½	.42½	.47½	.42½	.47½
32-36 Gas Oil (industrial)	.00¾	.01	.00¾	.01	.00¾	.01
32-36 Gas Oil (zero)	.00⅞	.01⅛	.01	.01⅛	.01	.01⅛
38-40 Straw Distillate	.01	.01¼	.01	.01¼	.01	.01¼

*Louisiana, Arkansas, Mississippi and East Texas delivery. †Lowest priced fuel oil has high sulphur content.

LUBRICATING OIL AND WAX

	July 14		July 7		June 30	
OKLAHOMA (Group 3)—						
100 vis., 2 color, 20-25 cold test	.04	.04½	.04½	.04¾	.04½	.04¾
100 vis., 3 color, 20-25 cold test	.03¾	.04	.04¼	.04½	.04¼	.04½
150 vis., 3 color, 20-25 cold test	.06¼	.06¾	.06¾	.07¼	.06¾	.07¼
150 vis., 4 color, 20-25 cold test	.05¾	.06	.06	.06½	.06	.06½
180 vis., 3 color, 23-28 cold test	.07½	.08	.07¾	.08¼	.07¾	.08¼
180 vis., 4 color, 23-28 cold test	.07¼	.07¾	.07½	.08¼	.07½	.08¼
180 vis., 5 color, 23-28 cold test	.07	.07¼	.07¼	.07½	.07¼	.07½
200 vis., 3 color, 23-28 cold test	.08½	.09	.08¼	.09	.08½	.09
200 vis., 4 color, 23-28 cold test	.08¼	.08¾	.08½	.09¼	.08½	.09¼
200 vis., 5 color, 23-28 cold test	.07¾	.08	.08	.08½	.08	.08½
240 vis., 3 color, 25-30 cold test	.10¼	.10¾	.10¾	.11¼	.10¾	.11¼
240 vis., 4 color, 25-30 cold test	.09½	.10	.10	.10½	.10	.10½
240 vis., 5 color, 25-30 cold test	.09	.09½	.09½	.10	.09½	.10
280 vis., 3 color, 25-30 cold test	.11¾	.12¼	.12¼	.12¾	.12¼	.12¾
280 vis., 4 color, 25-30 cold test	.10¾	.11¼	.11¼	.11¾	.11¼	.11¾
280 vis., 5 color, 25-30 cold test	.10¼	.10½	.10¾	.11½	.10¾	.11½
Cylinder Stocks:						
600, steam refined, light green	.04	.05½	.04	.05½	.04	.05½
600, steam refined, dark green	.02½	.03	.02½	.03	.02½	.03
190-200 vis., D color, Bright Stocks	.16		.17		.17	
150-160 vis., D color, Bright Stocks 0-10 c.t.	.12½	.13	.12½	.14	.12½	.14
150-160 vis., D color, Bright Stocks 10-25 c.t.	.12½	.12¾	.12½	.13	.12½	.13
150-160 vis., D color, Bright Stocks 25-40 c.t.	.12	.12½	.12¼	.13	.12¼	.13
150-160 vis., E color, Bright Stocks	.11¾	.12	.12	.12½	.12	.12½
Waxes:						
124-126 White Crude Scale Wax	.01¾	.02	.01¾	.02	.01¾	.02

All bright stock prices are for domestic movement.

PENNSYLVANIA—						
34 Neutral	.05½		.05½		.05½	
34 Sundebloom	.05		.05		.05	
36 Miners' Neutral	.05½		.05½		.05½	
150, 3 color	.15¼	.15½	.15¼	.15½	.15¼	.15½
180, 3 color	.18	.18½	.18	.18½	.18	.18½
200, 3 color	.21		.21		.21	
220, 3 color	.23¼	.26½	.23¼	.26½	.23¼	.26½
600, steam refined	.08	.08½	.07½	.08	.07½	.08
650, steam refined	.10½	.11	.10	.11	.10	.11
600, Pennsylvania Flash	.11½	.12	.11½	.12½	.11½	.12½
600, E filtered	.11	.11½	.11	.12	.11	.12
600, D filtered, Oil City	.16		.16		.16	
Pennsylvania Bright Stocks below 35 c.t.	.17		.16¼	.16½	.16¼	.16½
Pennsylvania Bright Stocks above 35 c.t.	.16½	.17	.16		.16	
*122-124 White Crude Scale Wax	.02		.02		.02	
124-126 White Crude Scale Wax	.02		.02		.02	

*At New York.

GULF COAST (South Texas)—						
100 vis., 2-2½ color, pale oil	.05⅝	.05½	.05½		.05½	
200 vis., 3 color, pale oil	.07⅝	.07⅞	.07½	.07¾	.07½	.07¾
300 vis., 3 color, pale oil	.08⅝	.08⅞	.08¾	.09	.08¾	.09
500 vis., 3½ color, pale oil	.09⅞	.10⅛	.10	.10½	.10	.10½
750 vis., 3½ color, pale oil	.11⅛	.11⅞	.11½	.12	.11½	.12
1,200 vis., 3½ color, pale oil	.13⅞	.14⅛	.14	.14½	.14	.14½
2,000 vis., 4 color, pale oil	.14⅞	.15⅛	.15	.15½	.15	.15½
200 vis., 5-6 color, red oil	.06⅝	.06⅞	.06¾	.07	.06¾	.07
300 vis., 5-6 color, red oil	.07⅞	.08⅛	.08	.08½	.08	.08½
500 vis., 5-6 color, red oil	.09⅛	.09⅝	.09¼	.09¾	.09¼	.09¾
1,200 vis., 5-6 color, red oil	.12⅞	.13⅛	.13	.13½	.13	.13½
2,000 vis., 6 plus color	.14⅞	.15⅛	.15	.15½	.15	.15½

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

CALIFORNIA—						
130 vis., 2½-3 color	.08	.08½	.08	.08½	.08	.08½
200 vis., 2½-3 color	.09	.10	.09	.10	.09	.10
300 vis., 3-3½ color	.10	.11	.10	.11	.10	.11
350 vis., 3½-4 color	.11	.12	.11	.12	.11	.12
400 vis., 3½-4 color	.12	.12½	.12	.12½	.12	.12½
Red Neutral:						
200 vis., 4½-5 color	.09½	.10	.09½	.10	.09½	.10
300 vis., 5-6 color	.10¼	.10¾	.10¼	.10¾	.10¼	.10¾
400 vis., 5-6 color	.11	.12	.11	.12	.11	.12
500 vis., 4½-5 color	.12¼	.13	.12¼	.13	.12¼	.13
500 vis., 5-6½ color	.12		.12		.12	
600 vis., 6½ plus color	.13	.14	.13	.14	.13	.14
700 vis., 6½ plus color	.14	.15	.14	.15	.14	.15

Note—Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

	July 14		July 7		June 30	
Gasoline, U. S. Motor, 58-60, 437 e.p.	.05½	.05¾	.05½	.05¾	.05½	.05¾
Kerosene, water white, 41-43	.04¾		.04¾		.04¾	
*Fuel Oil, Bunker "C," 41-43	.80		.85		.85	
†Fuel Oil, Diesel, 28-30, per bbl.	1.50		1.55		1.55	
Gas Oil, 28 gravity plus	.04		.04		.04	
25 pale Paraffin Oil, tank car	.10¼		.10¼		.10¼	
28 pale Paraffin Oil, tank car	.07¼		.07¼		.07¼	
280 red Paraffin Oil, tank car	.12½		.12½		.12½	
250 red Paraffin Oil, tank car	.11½		.11½		.11½	
225 red Paraffin Oil, tank car	.10		.10		.10	
200 red Paraffin Oil, tank car	.09¼		.09¼		.09¼	
Domestic heating oil, min. 32 grav., tank car	.04		.04		.04	
Refined Wax:						
120-122 a.m.p., per lb.	.02⅞		.02⅞		.02⅞	
125-127 a.m.p., per lb.	.03		.03⅛		.03⅛	
130-132 a.m.p., per lb.	.03½		.03⅝		.03⅝	
133-135 a.m.p., per lb.	.04		.04		.04	
135-137 a.m.p., per lb.	.04½		.04½		.04½	
Petrolatum in barrels in carload lots, per pound:						
Dark Green	.01⅝		.01⅝		.01⅝	
Amber	.02⅝		.02⅝		.02⅝	
Extra Amber	.02⅞		.02⅞		.02⅞	
Cream	.05⅝		.05⅝		.05⅝	
Lily White	.06½		.06½		.06½	
Snow White	.07		.07		.07	

*Lighterage 5 cents a barrel extra. †Lighterage 6.5 cents a barrel.

NEW YORK (BAYONNE) EXPORT PRICES

	July 14		July 7		June 30	
600, steam refined cylinder stocks, in bbls..	.15½	.16	.15½	.16	.15½	.16
635, steam refined	.16¼	.16½	.16¼	.16½	.16¼	.16½
650, steam refined	.18¾	.19	.18¾	.19	.18¾	.19
600, Pennsylvania Flash	.19½	.20	.19½	.20	.19½	.20
630, Pennsylvania Flash	.25¾	.26	.25¾	.26	.25¾	.26
600, Warren E	.19	.20	.19	.20	.19	.20
600, Oil City E	.18	.18½	.18	.18½	.18	.18½
Light 140-150 Bright Stocks	.24¼	.24½	.24¼	.24½	.24¼	.24½
Dark 140-150 Bright Stocks	.23½	.24	.23½	.24	.23½	.24

LOS ANGELES EXPORT PRICES

	July 14		July 7		June 30	
Kerosene, water white	.03½	.05½	.04½	.06	.04½	.06
*U. S. Motor gasoline, 53-55, 437 e.p.	.05	.06½	.05	.06½	.05	.06½
*58-60, 400 endpoint gasoline	.05½	.06½	.05½	.06½	.05½	.06½

*For coastwise shipments.

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

East Texas (June 20)‡.....$ .20
Rusk County, Tex. (April 4, 1931)*..... .25
Corsicana heavy (June 3, 1931)†..... .22
Other fields.....See gravity table

*Posted by Panola Pipe Line Co. ‡Posted by Magnolia Petroleum Co., June 20; Stanolind Oil & Gas Co., June 25. †Posted by Magnolia Petroleum Co.

TEXAS PANHANDLE

Gray County, Wheeler County and Carson-Hutchinson Counties.See gravity table

WEST TEXAS

Iatan and Westbrook..Same as North Texas
Crane, Upton, Crockett, Howard, Glasscock, Ector, Winkler and Pecos Counties*.....$ .10
Lea County, N. Mex.*..... .10

*The Humble Oil & Refining Co., July 8, 1931. All other companies, June 3, 1931. †The Texas Company, June 2, 1931. All other companies, June 3, 1931.

GULF COAST

Grade A and Grade B classifications discontinued.....See gravity table
Jennings, La. (July 13, 1931)*.....$ .30
Lockport, La. (July 8, 1931)†.....
.....See Gulf Coast gravity table
Refugio light.....See gravity table
Refugio heavy (July 8, 1931)‡..... .35
Markham (July 8, 1931)§..... .25
High Island (July 13, 1931)‖..... .30

*Gulf Refining Co. †Vacuum Oil Co. ‡Humble Oil & Refining Co. §The Texas Company. ‖Gulf Pipe Line Co.

EASTERN STATES

Joseph Seep Purchasing Agency
(Effective July 11, 1931)

Penna Grade Oil in National Transit Lines (Pennsylvania).....$1.35
Pennsylvania Grade Oil in Southwest Pennsylvania Lines..... 1.30
Penna Grade Oil in Eureka Pipe Line Lines (West Virginia)..... 1.10
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio)..... .95
Corning Grade Oil in Buckeye Pipe Line Co.'s Line..... .50
Ragland Grade Oil in Cumberland Pipe Lines (Kentucky) (Jan. 10, 1931)... .60
Wayne district Oil in Cumberland Pipe Lines (April 23, 1931)..... 1.17

Tide Water Pipe Co.
(Effective July 11, 1931)

Bradford, Pa., crude.....$1.60
Allegany, N. Y., crude..... 1.60

Pure Oil Co.
(Effective July 11, 1931)

Cabin Creek, W. Va.....$1.10
Kelly's Creek, W. Va..... 1.10
Bradford Hollow, W. Va..... 1.10

NORTH LOUISIANA-ARKANSAS

Smackover, Ark. (all grades) (June 2, 1931)*.....$ .37
Smackover, Ark. (all grades) (June 3, 1931)†..... .25
Smackover (all grades) (July 11, 1931)‡ .15
Bellevue, La. (June 3, 1931)..... .25
Urania (June 3, 1931)..... .30
Calion, Ark., heavy (June 3, 1931)..... .37
East El Dorado, Ark. (June 3, 1931).. .25
Stephens, Ark. (June 3, 1931)..... .20
Other fields.....See gravity table

*Posted by The Texas Company on June 2, 1931, and by Gulf Refining Co. on June 3. †Posted by Magnolia Petroleum Co. on June 3. ‡Posted by Standard Oil Co. of Louisiana July 11, 1931. Bellevue posted by Magnolia Petroleum Co., Standard Oil Co. of Louisiana having ceased posting on July 11, 1931. Urania by Louisiana Oil Refining Co. Calion by Gulf Refining Co.; East El Dorado by Gulf Refining Co. and Magnolia Petroleum

(Continued on Page 98)

CRUDE OIL GRAVITY TABLE

	Oklahoma, Kansas, North Central and East Central Texas 1	North Louisiana-Arkansas 2	Carson and Hutchinson Counties, Texas 3	Gray County, Texas 4	Salt Creek, Wyoming 5	Gulf Coast 6
Below 25 degrees	...	...	...	...	...	.31
25-25.9	...	...	...	...	...	.32
26-26.9	...	...	...	...	...	.33
27-27.9	...	...	...	...	...	.34
28-28.9	...	...	...	...	...	.35
Below 29	.10	.10	...	...	.10	...
29-29.9	.11	.11	...	...	.11	.36
30-30.9	.12	.12	...	...	.12	.37
31-31.9	.13	.13	...	...	.13	.38
32-32.9	.14	.14	...	...	.14	.39
33-33.9	.15	.15	...	...	.15	.40
34-34.9	.16	.16	...	...	.16	.41
Below 35	...	...	.11	.13	...	...
35-35.9	.17	.17	.12	.14	.17	.42
36-36.9	.18	.18	.13	.15	.18	...
37-37.9	.19	.19	.14	.16	.19	...
38-38.9	.20	.20	.15	.17	.19	...
39-39.9	.21	.21	.16	.18	.19	...
40 and above	.22	.22	.17	.19	.19	...

Note—On June 20, the Magnolia Petroleum Co. gave notice that effective at 7 a.m. on that day and until further notice, its prices on crude oil in the States of Oklahoma, Kansas, Texas, Louisiana and Arkansas, where it had been purchasing on a gravity basis, would be as follows per barrel at the well: North and Central Texas, including Burkburnett, Archer, Stephens, Henrietta, Electra, Comanche and Olden, 35 cents; East Texas, 20 cents; Thrall, 35 cents; East Central Texas, including Mexia, Wortham, Corsicana light, 34 cents; Panola County and Lytton Springs, 34 cents; Gray County, Texas Panhandle, 20 cents and Carson and Hutchinson Counties, Texas Panhandle, 26 cents; Oklahoma: Cushing, Yale, Oklahoma City, Morrison, Wewoka and Seminole, 36 cents; Cement, Duncan and Walters, 32 cents; Hewitt and Graham, 28 cents; Henidton, 25 cents. Kansas: Augusta, 30 cents. North Louisiana: Bull Bayou, 36 cents; Haynesville, 27 cents; Pine Island, 32 cents; Cotton Valley, 25 cents. Arkansas: El Dorado and Rainbow, 25 cents.

Column 1—In North Texas, Central Texas and East Central Texas, Humble Oil & Refining Co., July 8; The Texas Company, July 8; Gulf Pipe Line Co., July 13; Stanolind Crude Oil Purchasing Co., July 9. In Oklahoma, Sinclair Refining Co., July 8; The Texas Company, July 11; Tidal Refining Co., July 9; H. F. Wilcox Oil & Gas Co., July 8; Champlin Refining Co., July 9; Eason Oil Co., July 9; Pure Oil Co., July 10. Oklahoma and Kansas, Carter Oil Co., July 9; The Texas Company, July 11; Stanolind Crude Oil Purchasing Co., July 9; Empire Oil & Refining Co., July 11; Mid-Continent Petroleum Corp., July 9; Gypsy Oil Co., July 13.

Column 2—Standard Oil Co. of Louisiana, July 11; Louisiana Oil Refining Co., July 13; Gulf Refining Co. of Louisiana, July 13.

Column 3—Humble Oil & Refining Co., July 8; Gulf Pipe Line Co., July 13; The Texas Company, July 8. H. F. Wilcox Oil & Gas retains old price.

Column 4—Humble Oil & Refining Co., July 8; Gulf Pipe Line Co., July 13; The Texas Company, July 8. Phillips Petroleum Co. retains old prices.

Column 5—Mid-West Refining Co., July 10.

Column 6—Humble Oil & Refining Co., July 8; The Texas Company, July 8, but Texas posted 35 gravity at 42 cents and added 1 cent for each degree upward to 40 and above at 47 cents. Gulf Pipe Line Co. met Humble prices on July 13. Sun, Vacuum and other buyers adopted Humble schedule.

CALIFORNIA CRUDE OIL PRICES

STANDARD OIL CO. OF CALIFORNIA

For its current purchases of crude oil at the well (unless otherwise specified) for allowable crude oil produced in accordance with allocations made by the California Statewide Curtailment Committee. All gravities above those quoted take highest price offered in that field. Effective June 19, 1931, at 7 a. m.

Gravity	Signal Hill	Seal Beach, Alamitos Heights	Huntington Beach	Inglewood	Olinda-Brea Canon	Torrance	Richfield	Coyote Hills	Santa Fe Springs	Midway-Sunset Elk Hills, Buena Vista Hills	Lost Hills
14-14.9	$.65	$.65	$.65	$.65	$.65	$.65	$.65	$.65	...	$.55	$.55
15-15.9	.65	.65	.65	.65	.65	.65	.65	.65	...	.55	.55
16-16.9	.65	.65	.65	.65	.65	.65	.65	.65	...	.55	.55
17-17.9	.65	.65	.65	.65	.65	.65	.65	.65	...	.55	.55
18-18.9	.65	.65	.65	.65	.65	.65	.65	.65	...	.55	.55
19-19.9	.65	.65	.65	.65	.65	.65	.65	.65	...	.55	.55
20-20.9	.65	.65	.65	.66	.65	.65	.65	.65	...	.55	.55
21-21.9	.65	.65	.65	.67	.65	.66	.65	.65	...	.55	.57
22-22.9	.65	.65	.66	.70	.66	.66	.65	.65	...	.56	.59
23-23.9	.67	.67	.68	.73	.70	.67	.70	.66	...	.58	.60
24-24.9	.69	.69	.70	.74	.73	.68	.73	.67	$.65	.61	.62
25-25.9	.71	.71	.72	.76	.74	.70	.74	.69	.65	.64	.64
26-26.9	.73	.73	.74	...	.76	...	...	.71	.65	.66	.66
27-27.9	.75	.75	.76	...	.78	...	...	.73	.65	.68	.67
28-28.9	.77	...	...	...	.80	...	...	.75	.71	.71	.69
29-29.9	.79	...	...	...	...	...	...	.77	.73	.74	.71
30-30.9	.81	...	...	...	...	...	...	.79	.75	.76	.73
31-31.9	...	...	...	...	...	...	...	...	.78	...	...
32-32.9	...	...	...	...	...	...	...	...	.80	...	...
33-33.9	...	...	...	...	...	...	...	...	.83	...	...
34-34.9	...	...	...	...	...	...	...	...	.85	...	...
35-35.9	...	...	...	...	...	...	...	...	.87	...	...

Standard Oil Co. of California prices in other fields:
Wheeler Ridge—55 cents per barrel for all grades (14° to 25.9°).
Coalinga—55 cents for all grades from 14° to 24.24.9°; 57 cents for 25 gravity.
Newhall, McKittrick and Kern River—55 cents for all grades (14° to 19.9°).
Montebello—65 cents for all grades (14° to 35.9°).
Whittier and LaHabra—65 cents for all grades (14° to 23.9°).
Elwood Terrace, f.o.b. ship—32° to 33.9°, 79 cents; 34° to 34.9°, 81 cents; 35° to 35.9°, 84 cents; 36° and above, 87 cents.
Playa Del Rey: Prices subject to field gathering charge of 5 cents per barrel—19° to 19.9°, 65 cents; 20° to 20.9°, 66 cents; 21° to 21.9°, 66 cents; 22° to 22.9°, 67 cents; 23° to 23.9°, 68 cents; 24° to 24.9°, 67 cents; 25° and above, 65 cents.

ASSOCIATED OIL CO. PRICES

Associated Oil Co. prices, effective June 20, are as follows:
Ventura Avenue, 22 gravity, 58 cents, with 2 cents added for each degree upward to and including 30 gravity, which is 74 cents.
Kettleman Hills, 30 gravity and above, 66 cents.
Potrero, 24 gravity, 69 cents, with 3 cents added for each degree upward to 34 gravity, which is 69 cents.

(Continued on Page 106)

TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns July 14

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Chicago	14.0	14.0	3.0	9.0
Decatur, Ill.	14.4	14.4	3.0	9.0
E. St. Louis	13.7	13.7	3.0	8.2
Joliet	14.4	14.4	3.0	9.0
Peoria	14.4	14.4	3.0	9.0
Quincy	14.2	14.2	3.0	8.8
Davenport, Ia.	14.5	14.5	3.0	9.3
Des Moines	14.5	14.5	3.0	9.3
Keokuk	14.5	14.5	3.0	9.3
Sioux City	14.1	14.1	3.0	8.9
Duluth, Minn.	15.5	15.5	3.0	9.9
Mankato	15.1	15.1	3.0	9.7
Minneapolis	15.2	15.2	3.0	9.9
La Crosse, Wis.	16.2	16.2	4.0	10.0
Milwaukee	15.1	15.1	4.0	8.9
Madison	15.3	15.3	4.0	9.1
Detroit, Mich.	14.8	14.8	3.0	10.7
Grand Rapids	14.7	14.7	3.0	10.6
Saginaw	14.9	14.9	3.0	10.8
Evansville, Ind.	15.1	15.1	4.0	9.9
Indianapolis	15.3	15.3	4.0	10.1
South Bend	15.4	15.4	4.0	10.2
Fargo, N. D.	16.9	16.9	3.0	11.9
Huron, S. D.	16.3	16.3	4.0	10.7
Sioux Falls	15.8	15.8	4.0	10.4
K. C., Mo.	13.9	13.9	3.0	7.6
Springfield*	13.9	13.9	3.0	8.5
St. Louis*	12.9	12.9	2.5	8.3
St. Joseph	13.5	13.5	3.0	7.5
Wichita, Kans.	12.8	12.8	3.0	7.8
Bartlesville, Ok.	13.0	16.0	5.0	7.5

*State tax 2 cents, remainder city tax.

A third grade of gasoline, "Stanolind Blue," is sold at all major points at a price 2 cents or more below the price on the regular grade.

Effective April 15—Discounts on Q.D.A. on 1,000 gallons or more per month throughout territory; Red Crown Ethyl Gasoline, 3 cents off tank wagon price; Red Crown gasoline, 2½ cents off tank wagon price; Stanolind Blue gasoline, 1 cent off tank wagon price.

Discount in Chicago division on 1,000 gallons or more per month: Red Crown Ethyl Gasoline, 4 cents off tank wagon price; Red Crown gasoline, 3½ cents off tank wagon price; Stanolind Blue gasoline, 2 cents off tank wagon price.

Discounts on resellers authorized agent's agreement: Same amounts as above except made off service station price instead of tank wagon price.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Dallas, Tex.	13.0	14.0	4.0	8.0
Fort Worth	11.0	12.0	4.0	8.0
Houston	12.0	14.0	4.0	11.0
San Antonio	12.0	14.0	4.0	10.0
El Paso	13.0	15.0	4.0	12.0
Texarkana	16.0	16.0	4.0	11.0
Muskogee, Ok.	12.0	14.0	5.0	8.0
Okla. City	11.0	13.0	5.0	7.0
Tulsa	11.0	13.0	5.0	8.0
Ft. Smith, Ark.	14.0	14.0	5.0	11.0
Little Rock	15.5	16.0	6.0	11.0

One-cent rebate made from posted station prices to cash purchasers in Louisiana, Arkansas and Tennessee.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Omaha	15.25	16.25	4.0	9.25
McCook	16.0	17.75	4.0	10.75
Norfolk	15.75	16.75	4.0	9.75
N. Platte	16.75	17.75	4.0	10.50
Scottsbluff	16.0	16.0	4.0	10.25

Note—Dealers' discounts allowed as follows: Red Crown Ethyl, 3 cents off station price; Red Crown, 2½ cents off normal station price; Red Crown, 2½ cents off normal service station price; Nebraska Blue (third grade) 1-cent off normal service station price.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Albany, N. Y.	16.6	17.6	2.0	15.6
New York*	15.3	15.3	2.0	14.3
Buffalo	15.8	15.8	2.0	14.8
Rochester	16.0	16.0	2.0	14.0
Syracuse	16.8	16.8	2.0	14.8
Boston, Mass.	16.5	16.5	3.0	13.5
Augusta, Me.	18.8	18.8	4.0	14.8
Manch'tr, N. H.	18.4	18.4	4.0	14.0
Bulrington, Vt.	19.3	19.3	4.0	15.3

*Prices in steel barrels.

PENNSYLVANIA-DELAWARE AND PART OF NEW ENGLAND

Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Pittsburgh, Pa.	*11.0	*13.0	...	12.0
Philadelphia	*11.0	*13.0	...	12.0
Scranton	*11.0	*13.0	...	12.0
Allentown	*11.0	*13.0	...	12.0
Altoona	*11.0	*13.0	...	12.0
Erie	*11.0	*13.0	...	12.0
Dover, Del.	14.0	16.0	3.0	12.0
Wilmington	14.0	16.0	3.0	12.0
Springf'd, Mass.	15.5	16.0	3.0	10.0
Fall River	15.0	16.0	3.0	11.0
Worcester	15.3	17.3	3.0	11.0
Boston	14.5	16.5	3.0	11.0
Providence, R.I.	12.5	13.0	2.0	10.0
Hartford, Conn.	14.5	15.5	2.0	10.0
New Haven	14.6	16.6	2.0	10.0

*Does not include tax of 3 cents in Pennsylvania. Pennsylvania tax is collected by the dealer and paid by him direct to the State. Atlantic Refining Co. recognizes a 2-cent per gallon discount on gasoline from its posted tank wagon markets on sales to dealers for purpose of resale. Atlantic Refining Co. also recognizes a maximum discount of 2 cents per gallon on gasoline to commercial accounts under contract for one year.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Atl'tic City, N.J.	13.7	13.7	3.0	10.5
Newark	12.7	13.7	3.0	9.5
Annapolis, Md.	14.2	15.2	4.0	10.0
Baltimore	13.4	14.4	4.0	8.5
Cumberland	15.2	16.2	4.0	11.0
Wash'ton, D.C.	11.9	12.9	2.0	9.7
Danville, Va.	16.0	17.0	5.0	10.8
Norfolk	14.5	15.5	5.0	9.3
Petersburg	15.5	16.5	5.0	10.3
Richmond	14.9	15.9	5.0	9.7
Roanoke	16.2	17.2	5.0	11.0
Charles'n, W.Va.	14.7	15.7	4.0	10.5
Keyser	15.3	16.3	4.0	11.1
Parkersburg	13.4	14.4	4.0	9.2
Wheeling	14.6	15.6	4.0	10.4
Charlotte, N.C.	17.5	17.0	6.0	11.3
Hickory	17.8	18.8	6.0	11.6
Mt. Airy	17.7	18.7	6.0	11.5
Raleigh	17.4	18.4	6.0	11.2
Salisbury	17.7	18.7	6.0	11.5
Charleston, S.C.	15.5	16.5	6.0	9.3
Columbia	17.4	18.4	6.0	11.2

A 2-cent per gallon discount off the gasoline tank wagon price is offered to dealers, except in Washington, D. C. and in States of New Jersey and Maryland where discount is 3 cents.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
N. Orleans, La.	15.5	16.5	6.0	12.0
Baton Rouge	14.5	15.5	5.0	12.0
Alexandria†	15.5	16.5	6.0	12.0
Lafayette*	15.5	16.5	6.0	12.0
Lake Charles*	15.5	16.5	6.0	12.0
Shreveport	14.5	15.5	5.0	12.0
Knoxville, Tenn.	18.0	19.0	6.0	13.5
Memphis	14.0	15.0	6.0	10.0
Chattanooga	17.5	18.5	6.0	12.0
Nashville	17.0	18.0	6.0	12.5
Bristol	17.5	18.5	6.0	14.0
Lt. Rock, Ark.	15.5	16.0	6.0	11.0

*Includes city tax of 1 cent. Louisiana kerosene prices include 1-cent state tax. New Orleans kerosene price also includes 1-cent city tax.

†Gasoline price at Alexandria includes 1-cent tax in parish of Rapides.

Two-cent discount off gasoline and kerosene tank wagon price to dealer and commercial accounts.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Denver, Colo.	14.0	17.0	4.0	12.5
Pueblo	14.0	17.0	4.0	12.0
Grand Junction	16.0	16.0	4.0	14.5
Casper, Wyo.	15.0	18.0	4.0	10.0
Cheyenne	16.0	19.0	4.0	11.5
Butte, Mont.	17.0	20.0	5.0	16.0
Billings	20.0	23.0	5.0	14.5
Great Falls	20.0	23.0	5.0	16.0
Helena	20.0	23.0	5.0	16.0
Salt Lake, Utah	14.0	17.0	4.0	16.0
Albu'que, N.M.*	17.0	21.0	6.0	14.0
Boise, Idaho†	19.0	22.0	5.0	18.0
Twin Falls‡	18.0	....	5.0	18.0

*One-cent excise city tax. †Less 1 cent to dealers. ‡Less 3 cents to dealers.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Atlanta, Ga.	14 0	16.0	6.0	12.5
Augusta	18.0	20.0	6.0	14.0
Macon	16.0	18.0	6.0	12.0
Savannah	16.0	18.0	6.0	12.0
Birm'ham, Ala.	14.0	16.0	5.0	13.0
Mobile	16.0	18 0	4.0	13.0
Montgomery	16.0	18.0	4.0	13.5
Clarks'le, Miss.	18.0	20.0	5.0	13.5
Jackson	16.0	18.0	5.0	11.5
Natchez	18.0	20.0	5.0	13 5
Gulfport	16.0	16.0	5.0	13.5
Vicksburg	16.0	16.0	5.0	11.5
Jack'ville, Fla.	17.0	18.0	6.0	12.0
Miami	18.0	20.0	6.0	13.0
Pensacola	19.0	20.0	6.0	13.0
Tampa	17.0	18.0	5.0	12.0
Lexington, Ky.	17.0	18.0	5.0	12.0
Covington	16.0	17.0	5.0	11.0
Louisville	16.0	17.0	5.0	11.0
Ashland	17.0	19.0	5.0	13.0
Paducah	17.0	18.0	5.0	11.0
Bowling Green	19.0	21.0	5.0	14.5
Corbin	18.0	19.0	5.0	15.0

A third grade, "Kyso Green," is sold at a price generally 2 cents below the price on the regular grade.

In addition to the state tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and one-half cent on kerosene. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene and one-fourth cent on gasoline. To Pensacola, Montgomery, Birmingham and Mobile state taxes add 1-cent levy tax. To Gulfport state tax add privilege tax of 2 cents.

Effective April 2, price to dealers 2 cents under posted tank wagon price.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Ohio points	15.0	16.0	4.0	*12.0

Dealers and commercial accounts 2 cents under tank wagon.

*Service station price 13.0 cents.

PACIFIC COAST TERRITORY

	Gasoline			Kero.
	Wh'ls'e price	Retail* price	Incl'ds tax	tank wagon
Fresno	19.5	16.5	3.0	17.0
San Francisco	19.5	16.5	3.0	16.5
Los Angeles	19.0	16.0	3.0	15.5
Reno, Nev.	23.5	20 5	4.0	19.0
Portland, Ore.	21.0	18.0	4.0	16.5
Seattle, Wash.	22.0	19.0	5.0	16.5
Tacoma	22.0	19.0	5.0	16.5
Spokane	23.5	20.5	5.0	20.5
Phoenix, Ariz.	15.5	17.5	5.0	20.0

Above prices are at company's plant or depots as company does not operate stations. A 6-cent per gallon discount is given dealers and customers taking tank wagon lots except in Phoenix where the discount is 3 cents plus a 2-cent special temporary discount subject to withdrawal at any time.

*Retail prices posted by Standard Stations, Inc., a subsidiary.

NAPHTHA

	Tank wagon	Tank car
Oleum spirits	12.0	3.0
V.M.&P. naphtha	14.0	9.5
Cleaners' naphtha	16.2	11.0
Stanisol	16.2	11.0

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

STANOLIND FURNACE OIL IN CHICAGO

All dumps of 50 gallons or more $0.07

Note—Outside Chicago furnace oils discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1¼ cents on deliveries of 350 gallons or more.

TANK WAGON CHANGES

Standard Oil Co. of New Jersey reduced the gasoline tank wagon and station prices 1 cent through practically all of its territory on July 7.

Standard Oil Co. of Nebraska advanced the tank wagon and station prices on its regular grade of gasoline to 15¼ and 16¼ cents respectively in Omaha, Neb., and at the same time introduced Nebraska Blue a third grade of gasoline which was initially sold for 9.9 cents including the tax.

Atlantic Refining Co. reduced the gasoline station price to 16 cents in each Springfield and Worcester, Mass., and to 15.5 cents in Hartford, Conn., on June 3, and reduced the station price to 13 cents in Providence, R. I., June 7.

CRUDE OIL PRICE CHANGES

On July 8 the Humble Oil & Refining Co. posted a new schedule in North Texas, Central Texas and East Central Texas (but not East Texas) as follows:

(Continued on Page 106)

CRUDE OIL PRICES

(Continued from Page 97)

Co. Stephens posted by Louisiana Oil Refining Co. and Atlantic Oil Producing Co.

SOUTH CENTRAL AND SOUTHWEST TEXAS

Darst Creek (July 8, 1931)‡	$ .20
Luling (June 3, 1931)†	.25
Mirando (July 8, 1931)‡	.25
Pettus (July 8, 1931)‡	.25
Salt Flat (July 8, 1931)‡	.20
Thrall§	..
Lytton Springs (Lockhart) See gravity table	
Dobrowolski‖	
Same as Mid-Continent gravity scale up to and including 38-38.9°	
Somerset¶	
Same as Mid-Continent gravity scale up to and including 38-38.9°	

‡Humble Oil & Refining Co. §Thrall prices same as North Central Texas less 19½ cents per cwt. freight. ¶Grayburg Oil & Refining Co., Pioneer Oil & Refining Co. and Texas Petroleum Products Co. ‖Pioneer Oil & Refining Co.

ROCKY MOUNTAIN STATES
Ohio Oil Co.-Midwest Refining Co.

Iles (July 10, 1931)	$ .30
Fort Collins (July 10, 1931)	.15
Florence (July 10, 1931)	.13
Wellington (July 10, 1931)	.10
Dutton Creek (July 10, 1931)	.25
Rock Creek, Wyo. (July 11, 1931)	.30
Frannie, light (July 10, 1931)	.20
Frannie, heavy (July 10, 1931)	.10
Salt Creek....Mid-Continent gravity table	
Big Muddy (July 10, 1931)	.25
Grass Creek (July 10, 1931)	.47
Elk Basin (July 11, 1931)	.47
Lance Creek (July 10, 1931)	.60
Poison Spider (Mar. 5, 1931)	.70
Notches (Mar. 14, 1927)	.65
Hudson (June 2, 1931)	.65
Lander (Mar. 5, 1931)	.40
Rex Lake (Feb. 22, 1930)	1.10
Osage (Apr. 15, 1931)	.98
Lost Soldier (Mar. 5, 1931)	.55
Hamilton Dome (Mar. 14, 1927)	.85
Greybull (Oct. 25, 1930)	1.25
Torchlight (Oct. 23, 1930)	1.25
Cat Creek (July 10, 1931)	.45
Pondera, Mont. (July 10, 1931)	.60
Sunburst, Mont. (July 10, 1931)	.70
Hogback, N. Mex. (July 10, 1931)	.50
Artesia, N. Mex. (June 3, 1931)	.35
Lea County, N. Mex. (July 8, 1931)	.10
Border, Mont.	1.55
Red Coulee, Alberta	1.55
Dry Creek, Mont. (July 10, 1931)	.60

Note—Salt Creek, Cat Creek, Dry Creek, Dallas-Derby, Hudson, Greybull and Hogback posted by Midwest Refining Co. and remainder by Ohio Oil Co. Both companies posted Grass Creek light and Elk Basin. Lost Soldier posted by Producers & Refiners Corp. Artesia posted by Continental Oil Co. Border and Red Coulee posted by Imperial Refining Co. Ohio Oil Co. ceased posting Artesia on March 5, 1931. Lea County posted by Humble Oil & Refining Co. Fort Collins, Wellington, Orchard, Florence, Rattlesnake and Table Mesa by the Continental Oil Co. Osage posted by Arro Oil & Refining Co.

MIDDLE WESTERN STATES
Ohio Oil Co.
(Effective July 11, 1931)

Lima	$ .55
Wooster	.53
Illinois	.40
Indiana	.20
Princeton	.40
Plymouth	Shut in
Western Kentucky	.35
Midland, Mich.* (July 11, 1931)	.37
Dundee, Mich.†	
Same as Stanolind Crude Oil Purchasing Co.'s Mid-Continent gravity scale	
Upper and Lower Traverse Sands, Mich.†	
....Same as Mid-Continent gravity scale	
Somerset, Ky. (July 14, 1931)	.40
Oil City, Ky. (June 6, 1931)	.30
Petrolia (Canada) (June 4, 1931)‡	1.50
Oil Springs (Canada) (June 4, 1931)‡	1.62
Alberta (Canada)‡:	
50° and above (Mar. 1, 1931)	2.36
45 to 45.9° (Mar. 1, 1931)	1.87

*Posted by Pure Oil Co. †Posted by Standard of Indiana for boat shipment. ‡Posted by Stoll Refining Co. ¶Posted by Imperial Oil, Ltd. ‖Posted by Imperial Oil, Ltd., and Regal Oil & Refining Co. of Calgary. Somerset, Ky., crude purchased by Ashland Refining Co., Ashland, Ky., and delivered through Cumberland Pipe Line.

MEXICAN CRUDE

Panuco*	$ .44

*F.o.b. ship, based on June transactions and exclusive of taxes and bar dues.

Of Interest to Sales Departments

Standard of Indiana Stops Loaning and Leasing Equipment

CHICAGO, July 14.—Effective August 1 Standard of Indiana will discontinue installing, loaning or leasing service station equipment to resellers. Officials explained that under competitive conditions it has become customary for oil companies or other wholesalers to provide retailers most of the equipment. This practice has long been regarded in the oil industry as unsound economically in that it has encouraged multiplicity of outlets far beyond consumer needs.

Indiana's discontinuance of practice is undertaken in an effort to put its wholesale business on a basis of straight commodity selling. New policy will become permanent officials said, if competitive situation permits.

The Standard company will discontinue supplying pumps, tanks, and other dispensing equipment, leaving it to resellers to make their own arrangements directly with the suppliers of equipment. Nor will the company furnish air compressors, air towers, flood lights, light posts, lighting equipment, power lifts, battery charging and tire equipment, and other items which retailers have become accustomed to requesting from oil companies. The company will also decline to carry out or pay for any construction work about stations or for any painting other than that involved in identifying stations and obliterating competitive advertising. The policy will not be retroactive and no equipment already furnished will be taken away from established accounts, but such dealers will be expected to make their own provisions for any new or additional equipment or for any changes. In taking over accounts previously supplied by other companies Standard will supply equipment similar in kind and age to that already installed or buy the installed equipment in accordance with fixed rates. It will expect to collect on like basis for its equipment when an account goes to competitor. Second-hand equipment may be disposed of to dealers, but no new equipment whatever will be sold or installed even for full payment.

The drive-in stations leased by Standard of Indiana under agreements by which the operators become the company's authorized agents will not be affected by the change in policy. While the Standard of Indiana action will have little immediate effect on established retail outlets, it is expected to discourage the unsound multiplying of pumps and of outlets generally which has been the subject of much discussion in the oil industry and by government trade analysts.

NEW SPECIFICATIONS SOON

It is expected that the new specifications for U.S. Motor gasoline will be officially promulgated by the United States Specifications Board before the end of the month. These specifications, which were explained in the April 23 issue of The Oil and Gas Journal, page 21, were prepared by the Bureau of Standards and were submitted to the industry for comment several months ago. Criticism so far received, it is said, has been favorable.

PHILLIPS ENLARGES STATION

The Phillips Petroleum Co. is enlarging its bulk station facilities at Chicago with the addition of 250,000 gallons storage capacity. The company is also building a combination warehouse and office building to cost $60,000.

INTERPRETATION OF NEW CODE RULES EXPLAINED BY NATIONAL COMMITTEE

New interpretations of Rules 3, 7, 16 and 17 of the National Code of Practices for Marketing Refined Petroleum Products have been made and promulgated by the national committee on interpretation of the code since reapproval of the code June 12 by the Federal Trade Commission. The entire code was formally approved by American Petroleum Institute board of directors. The interpretations follow:

Interpretation of Rule 3—The word "maliciously" as used in this rule means intentional or deliberate. Companies may buy or lease service stations notwithstanding occupying dealers have sales contracts with other companies; provided either, (1) the contracts with existing suppliers are performed according to their terms; or (2) proper termination notices are given according to the terms of the sales contracts.

Interpretation of Rule 7—This rule prohibits the rental by refining companies, wholesalers, distributors and/or jobbers of service stations or sites (meaning thereby all places where refined products are, or are intended to be, sold) at one rental and leasing or licensing the same property to the lessor, or third parties, at a reduced rental, for the purpose of secretly rebating. If the refining companies, wholesalers, distributors, and/or jobbers place any improvement on said leased properties, such subleases shall provide, in addition, for a reasonable return upon the cost of such improvements. In event of a change in traffic conditions or physical surroundings after acquisition of the property by the company, either increasing or diminishing its value, a reasonable return on the fair value of the property for filling station purposes at the time of leasing should be required.

The cost in place of gasoline or kerosene pumps or tanks, motor oil equipment, and grease outfits (grease outfits not to exceed $50 each) ordinarily loaned to customers, need not be included in "the fair value of the property for filling station purposes."

The effect of this rule is to prohibit the use of the lease and license plan or lease and license agreements, known generally in the trade, for the purpose of secretly rebating. For example, if a refining company, wholesaler, distributor, and/or jobber rents a service station or service station site at a substantial rental, the effect of this rule is to prohibit the subleasing or licensing to a dealer at a materially reduced rental for the purpose of secretly rebating; the same rental, or substantially the same rental, shall be collected from the dealer as is paid by the refining company, wholesaler, distributor, and/or jobber, unless copy of the agreement evidencing such lower rental is placed on file at the point from which deliveries are made and kept there subject to public inspection, or in the absence of a copy at the point from which deliveries are made, shall offer to submit copy of such contract for inspection at its office.

The words "bona fide lease," as used in this rule, are interpreted to mean only formal written leases of not less than one year's duration—stating the actual consideration to be paid as rentals by the lessee, containing no privilege of cancellation on the part of the lessor in less than one year, and bearing the written consent of the fee owner of the property; to be filed for record by the lessee within 30 days after execution.

Rule 16

Interpretation of Rule 16—This rule prohibits the use of trading stamps, trading money, trading receipts, and/or similar plans, devices or schemes in any manner connected with the sale of refined petroleum products.

In the case of races, contests, meets, or record runs of any nature involving automobiles, motorcycles, motor boats or other motor driven vehicles or vessels, this code prohibits refiners, distributors, jobbers, wholesalers and retailers from (1) donating petroleum products of any nature to drivers, operators or pilots; provided, however, a reasonable amount of product may be donated to engine manufacturers and the operators of said vehicles or vessels to test, for the purpose of securing approval by such manufacturers and operators of such products; (2) donating money, prizes, products or other things of value, either directly or indirectly, conditioned upon or in connection with the purchase of petroleum products. Supplying company-owned or chartered vehicles and/or vessels are excepted; (3) carrying newspaper, display or other advertisement for the benefit of operators of the aforesaid vehicles or vessels or for companies or persons not affiliated with the advertising company. This does not prohibit a company advertising its own products, stating that designated vehicles or ves-

(Continued on Page 103)

NEW MARKETING PLAN USED IN CALIFORNIA

SAN FRANCISCO, Calif., July 14.—All major California oil refiners and marketers have instituted individually a plan to stabilize retail gasoline prices along the Pacific Coast by establishing a uniform price of 13½ cents as the tank wagon price to all retailers.

The adoption of this plan yesterday closely follows the suggestions of the California oil survey committee which concluded its report recently after a neutral investigation of all factors entering into the marketing of gasoline in the Coastal states.

Under the new plan price concessions will not be permitted regardless of the size of the outlet or grade of gasoline sold. This has not been true in the past. This in effect represents a concession on the part of the larger companies but has been accepted by all. In this manner the companies following out the dictates of the plan, will post the retail price at which the motor fuel is to be sold and in effect the retail company will act as an agent of the manufacturing company. If for any reason the stations violate this agreement with respect to price the agency privileges may be withdrawn.

INTRODUCE PENNZIP GASOLINE

OIL CITY, Pa., July 11.—The Pennzoil Co. of this city throughout its marketing territory, is introducing two branded gasolines bearing the name of Pennzip. A regular white grade is known as Pennzip gasoline and the premium grade is Pennzip Ethyl.

The company has recently installed additional cracking facilities at its refinery near here. Exceptionally high antiknock properties are claimed both for the regular and premium grades.

NORTH DAKOTA TAX

North Dakota is assured of a 4-cent state tax on gasoline following the ruling of the attorney general's department that the petition which would have suspended operation of the law increasing the tax from 3 cents, was illegal. The state department held that the petition was defective in form and did not have enough signatures.

ROCK ISLAND INCREASES PURCHASES OF FUEL OIL

All lines of the Rock Island Railroad south and west of Kansas City will burn oil in their locomotives according to an announcement by J. E. Gorman, president of the railroad. A total of 231 locomotives operating between Kansas City and Tucumcari, N. M., and between Herrington, Kans., and Fort Worth, Tex., a total distance of 1,061 miles, will be converted from coal to oil. It will require from 60 to 90 days to convert all the locomotives.

The railroad has already made arrangements for the purchase of the fuel oil from Mid-Continent refiners with plants located along the Rock Island lines. Oil stations will be located at Topeka, Cline, Caldwell, Clay Center, McFarland, Armourdale and Herrington, Kans., and at Haileyville, Hobart, Lawton, Enid, Ardmore and Anadarko, Okla. The Arkansas-Louisiana and Oklahoma divisions of the Rock Island have been using fuel oil for over a year.

CALIFORNIA DEALERS TO ORGANIZE ASSOCIATION

SAN FRANCISCO, Calif., July 11.—In an effort to more effectively combat price cutting problems, a state wide association of oil dealers is being proposed. Sponsors of the movement believe that an organization of legitimate dealers can be effected which will greatly aid in bringing price stabilization.

In recent weeks, associations have been enlarged serving the San Francisco and Los Angeles areas and dealers in other large cities and towns have indicated their willingness to join a state organization. A meeting of the Southern California Petroleum Dealers' Association was held last week at Lost Angeles. A plan was outlined to add 100 to 150 new members to the association.

There are constant reports in all parts of the State that another "price war" is about to start. A few independent dealers persist in lowering both the tank wagon and service station prices. So far there has been no indication on the part of the major distributors that this competition was becoming serious.

FIRST STATION OWNER TO RE-ENTER BUSINESS

KANSAS CITY, Mo., July 11.—Alexander A. Smith, who in 1913 was credited with building the first drive-in service station in this city, is re-entering the business after a retirement of five years.

Mr. Smith in June, 1926, operating under the name of the Monark Gasoline & Oil Co. sold 66 stations to the Manhattan Oil Co. which later was merged with the Independent Oil & Gas Co. Recently the latter company was merged with the Phillips Petroleum Co. which now operates the stations. Under the sales contract, Mr. Smith could not engage in the station business for five years.

The five-year period expired July 1 and on that date, Mr. Smith made arrangements to re-enter the business using the former Monark name. A bulk station has been provided and to start the retail distribution, he will build four stations of the super-service station type.

TEXAS ASKS FOR BIDS

On July 28 the State Board of Control of Texas will take bids on a 5,000,000-gallon supply of gasoline for use of the state highway and other departments. Bids on a year's supply of oil will also be taken at this time.

Union Oil Declares Regular Dividend

Relieves Anxiety About Prospects in California. Chairman Sinclair Makes Statement on Omitted Sinclair Consolidated Dividend

The board of directors of Union Oil Co. of California has declared the regular quarterly dividend of 50 cents a share, payable August 10 to stockholders of record July 18. The company's stock transfer books will not be closed. Union Associates also declared the regular 50 cents dividend carrying the same dates.

Net earnings of Union Oil for the first six months ended July 30, 1931, after provision for depletion, depreciation and drilling expenditures, amounted to $1,900,000, equivalent to 43 cents a share on 4,386,070 shares outstanding as compared with $5,105,000, or $1.20 a share on 4,304,453 shares for the first half of 1930, according to President L. P. St. Clair.

Net income for the period, after all changes, fell below half-year dividend requirements of $1 a share, but operating profit of $5,500,000 was equivalent to $1.25 an outstanding share. More than sufficient cash, therefore, was earned during the period to pay regular dividends without drawing from cash reserves. Operating results on the whole were better than anticipated in the face of a severe decline in gasoline prices and generally unfavorable economic conditions which prevailed during the greater part of the first six months of this year.

Sales for the period totaled $33,000,000 as against $44,500,000 for the 1930 similar half-year, indicating a decline in dollar value of 25.9 per cent, which was almost wholly the result of the much lower price structure for refined products. Notwithstanding the fact that the company pursued the policy of not seeking business in unprofitable foreign and Atlantic Coast markets, the volume of sales declined only 3.6 per cent to 18,500,000 bbls. of products.

Sales and income accounts for the six months ended June 30 follow:

	1931	Per share*
Sales of products: Barrels	18,500,000	
Value	$33,000,000	
Profit subject to depreciation, etc.	$5,500,000	$1.25
Provision for depletion, depreciation and drilling expenditures	3,600,000	0.82
Profit for six months..	$1,900,000	$0.43

*Calculated on shares outstanding June 30: 4,386,070.

The decrease of $2,650,000 in provision for depletion, depreciation and drilling expenditures during the 1931 half was occasioned principally by the fact that the company operated an average of only seven strings of tools in California during the period as compared with 27 strings for the same 1930 six months, and to the decreased production of crude oil through further curtailment in the State.

Inventories of crude oil have been written down to prices prevailing on June 30, 1931, and refined products on hand also have been reduced and valued at the cost of production based on the same crude prices. All inventory losses realized during the six months' period just closed have been deducted from operating profit as reported, while the residue of inventory loss has been charged to surplus. After these adjustments, the book value of the company's stock was approximately $39 per share on July 1. As a consequence of an average increase in the tank wagon price of gasoline amounting to 5½ cents a gallon on June 19, prices for all grades of crude oil, excepting for heavy crudes, were raised the following day, the increase varying according to gravity from 2 cents to 54 cents per barrel.

Production, subject to royalty, of crude oil and natural gasoline for the half year approximated 7,200,000 bbls., a decline of 2,400,000 bbls. from the 9,600,000 bbls. produced in the 1930 period. The company's present daily production of crude oil and natural gasoline (subject to royalty) from 445 wells is about 41,000 bbls. In addition, 509 wells capable of producing approximately 55,000 bbls. a day are shut in. On July 2 the King well, drilled at Kettleman Hills, in connection with the Union-Amerada agreement, was completed for an initial daily production of 20,000 bbls. of 37 degrees gravity oil. In accordance with curtailment measures the well has since been pinched back to about 4,000 bbls. per day.

During the first six months of this year the company's capital outlay, mainly expenditures for marketing facilities, additional refinery equipment, pipe lines and field development, approximated $2,900,000—$6,100,000 less than the $9,000,000 expended in the 1930 period.

Total current assets of $59,000,000 on June 30 showed a decrease of about $11,000,000 from December 31, 1930, although cash resources of $18,000,000 remained unchanged. Current liabilities declined $2,800,000 to $5,400,000 and mortgage indebtedness was decreased by $1,921,000 for a total reduction in liabilities of $4,721,000. The balance of decrease in working capital was occasioned by inventory adjustment and the decline in dollar-value-to-volume ratio of accounts receivable owing to materially lowered prices prevailing for products on June 30 as compared with December 31, 1930.

The company's ability to maintain its cash dividend, provide for necessary capital outlay, reduce indebtedness and still maintain cash resources at the $18,000,000 level existing the first of the year is explained by the general tightening of the company's outlay to conform to decreased income. The liquidity of working capital is well illustrated when it is pointed out that cash resources on June 30 were equivalent to 3.3 to 1 of current liabilities as compared to 2.2 to 1 at the end of 1930, and that the current ratio was also improved to 10.9 to 1 as compared with 8.5 to 1 on December 31, 1930. To some extent this is explained by a partial decrease in current liabilities through the decrease in volume and cost of crude oil purchases.

Sinclair Consolidated Oil

A statement issued by Chairman H. F. Sinclair to stockholders of Sinclair Consolidated Oil Corp., says:

"The dividend on the common stock of your corporation normally payable July 15 next, was not declared by the board of directors. Notwithstanding an increase in the volume of our principal products, prices have been so low as to make satisfactory earnings impossible even after reducing operating expenses and putting into effect drastic reductions in all executive salaries and such reductions in the general payroll as could be made with justice to our employes. Under these circumstances it was believed advisable to defer common stock dividends.

"The management is altogether sympathetic with the belief of stockholders that they are entitled to a return on their investment. However, until general conditions and the situation of the oil industry improve, it was considered unwise to draw upon surplus to pay dividends. Continuation of such a course, in the absence of improved conditions, might easily prove to be disastrous.

"The effect of the world-wide depression on all business is indicated by the fact that between January 1 and June 15 of this year, 579 corporations omitted dividends; in addition 363 corporations reduced dividend payments. Thousands of our employes and officials are stockholders. We share with other stockholders the hope that Sinclair, which was one of the last to omit its common dividend, will be among the first to benefit from an upward trend of business. The efforts of our entire organization are directed to this accomplishment, in which we are confident of the understanding and support of every stockholder."

Twenty Representative Stocks

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange and New York Curb, based on closing quotations for Wednesday, was as follows:

Nov. 19	31.54	Mar. 18	26.78
Nov. 26	30.86	Mar. 25	26.35
Dec. 3	30.53	Apr. 1	24.80
Dec. 10	28.57	Apr. 8	25.52
Dec. 17	25.42	Apr. 15	24.72
Dec. 24	25.68	Apr. 22	22.73
Dec. 31	26.15	Apr. 29	20.54
Jan. 7	27.56	May 6	20.74
Jan. 14	27.31	May 13	20.38
Jan. 21	27.55	May 20	19.25
Jan. 28	27.26	May 27	18.35
Feb. 4	27.26	June 3	18.00
Feb. 11	27.76	June 10	19.62
Feb. 18	28.53	June 17	19.22
Feb. 25	29.33	June 24	22.33
Mar. 4	27.67	July 1	22.32
Mar. 11	26.53	July 8	21.24

EAST TEXAS PRODUCING SANDS

Dallas petroleum geologists, headed by R. B. Whitehead of the Atlantic Oil Producing Co., chairman, announce that they now have available for distribution to all interested, copies of their report on "The Oil Producing Sands of East Texas." The data, including 11 maps and 28 pages of mimeographed reports, have been compiled in booklet form, the sheets being 8½"x14" and paper bound. The contributors to this report are: Dr. R. T. Hill, W. C. Spooner, Dr. Gayle Scott, P. W. McFarland, F. B. Plummer, Dr. F. H. Lahee, E. M. Rice, Merle Israelsky, E. C. Sargent and R. B. Whitehead. As long as the supply lasts copies can be secured for 75 cents each by sending request to S. M. Aronson, secretary-treasurer, 306 Magnolia Building, Dallas, Tex.

STANDARD OIL STOCKS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

(Complete record week ending July 4)

1931 High	1931 Low	Week ending July 4 Sales	Week ending July 4 High	Week ending July 4 Low	Close July 5	Stocks—	Outstanding capital	Par value	Div. rate	Last paid	1928 High	1928 Low	1929 High	1929 Low	1930 High	1930 Low
1	⅛	No sales.	..	..	..	Atlantic Lobos	490,448	N.P.	....	5-28-30	..	..	..	..	1	¼
12⅞	6¼	No sales	..	..	..	Borne Scrymser	$1,000,000	$25	....	10-15-30	56½	44½	46½	25	25	11¼
51	41	100	42¼	42¼	..	Buckeye Pipe Line	$10,000,000	$50	$1Q	6-15-31	76	53	74½	55	69	39⅛
129½	101	100	120	120	..	Chesebrough Mfg.	$3,000,000	$25	$1Q‡	6-30-31	161	117	210	130	184⅞	104¼
3⅞	2	1,400	3¼	2⅞	2¾	Creole Petroleum	(sh) 5,977,873	N.P.	....	.....	17½	9½	11⅝	5⅝	7⅝	3
30	20⅝	No sales.	..	..	..	Cumberland Pipe Line	$1,500,000	$50	50cQ	6-15-31	114	67	75⅝	40	65⅝	20¼
31	24	No sales.	..	..	..	Eureka Pipe Line	$5,000,000	$100	$1Q	5- 1-31	88	64½	70½	42	54⅜	26
2⅞	1	100	1¼	1¼	..	Galena Signal Oil	$16,000,000	$100	....	.....	13	4¼	6½	3	7	2½
72	49⅞	4,100	69½	63⅝	61⅝	Humble Oil & Refining	$74,103,300	$25	50cQ	7- 1-31	114¾	59½	128	74⅛	119	57¼
18¼	9⅞	2,600	13⅜	12⅝	..	Imperial Oil of Canada (new)	(sh) 25,421,768	N.P.	12½cQ	6- 1-31	104	58¾	41	22	30	15
21⅛	9⅛	400	12	11⅞	11½	Indiana Pipe Line (new)	$3,000,000	$10	25cQ	5-16-31	91⅞	74⅜	41⅞	26	41	14½
15½	8¾	10,200	12¼	11¾	11⅝	International Petroleum (new)	(sh) 14,247,088	N.P.	25cQ	6-15-31	55	35	30⅜	15	24	11⅜
17½	11¼	300	13¾	12¾	..	National Transit	$6,362,500	$12.50	25cQ	6-15-31	32⅜	19⅜	25½	10⅛	22⅜	11½
14½	7½	100	7½	7½	..	New York Transit	$1,000,000	$10	25cQ	7-15-31	75	38½	17½	10	21⅞	10⅛
30	27	No sales.	..	..	..	Northern Pipe Line	$2,000,000	$50	$2SA	7- 1-31	69	56½	63	41	54	26¼
15½	8	No sales.	..	..	..	Penn Mex Fuel	$10,000,000	$25	75c	6-24-31	84	28	44½	20	32	12
8	3¼	400	6	5⅞	..	Solar Refining	$4,000,000	$25	....	12-20-29	..	..	50	29	33	4⅞
17	10	100	11	11	..	Southern Pipe Line	$1,000,000	$10	50c	6- 1-31	19	15	22½	13	20⅞	8⅜
23⅞	12⅜	800	15¼	14½	14½	South Penn Oil	$30,000,000	$25	25cQ	6-30-31	71⅛	36¾	60¼	35½	45⅞	16⅛
38	31¼	50	31¼	31¼	..	Southwest Pennsylvania Pipe Line	$1,750,000	$50	$1Q	7- 1-31	102	70	70	60	64	32
38½	19½	24,800	28	26¾	26⅝	Standard Oil of Indiana	$348,175,069	$25	50cQ	6-15-31	95⅞	70⅞	63	45	59⅜	30
23⅝	15⅝	800	19⅛	18½	18⅜	Standard Oil of Kentucky	$25,654,516	$10	40cQ	6-30-31	179¾	122¼	46⅞	29	40½	18⅝
36½	19¼	100	25¼	25¼	..	Standard Oil of Nebraska	$4,649,225	$25	50cQ	6-20-31	54⅞	39⅞	50¼	40	48⅞	34⅝
62½	35	1,300	43½	43	42¾	Standard Oil of Ohio	$14,000,000	$25	62½cQ	7- 1-31	134	71	129	60	108½	43¼
3½	2¾	No sales.	..	..	..	Swan-Finch Co.	$861,466	$25	....	1-15-29	23¼	16	18	10	10	4
69¾	22⅛	19,700	44¾	42⅛	41¼	Vacuum Oil Co.	$126,180,350	$25	50cQ	6-20-31	111	72	133¾	75	97⅞	45⅝

*Ex-dividend. †Unit of trading less than 100 shares. ‡Plus 50 cents extra.

INDEPENDENT OILS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

(Complete record week ending July 4)

1931 High	1931 Low	Week ending July 4 Sales	Week ending July 4 High	Week ending July 4 Low	Close July 8	Stocks—		Outstanding capital	Par value	Div. rate	Last paid	1928 High	1928 Low	1929 High	1929 Low	1930 High	1930 Low
1¾	½	500	⅞	¾	¾	American Maracaibo	(sh)	700,000	N.P.	....	.....	9½	3⅛	8⅝	1⅛	4½	½
16⅞	8½	No sales.	..	..	..	British American Oil Corp.		1,311,321	N.P.	20cQ	7- 2-31	55	32¾	62	7⅞	23	13⅜
2⅝	½	2,600	1½	1⅜	1⅜	Carib Syndicate		$131,250	25c	....	.....	4½	3⅞	4⅞	1	2¾	⅝
20¾	9¾	97,100	13⅛	11⅞	11⅝	Cities Service	(sh)	24,290,359	N.P.	30cA‡	7- 1-31	90⅞	54	68⅛	20	44¼	13
84¾	61¼	600	67⅝	67⅛	66¾	Cities Service pfd.	(sh)	1,500,000	N.P.	50cM	7- 1-31	103¼	94½	98⅝	84	93⅞	78¼
½	⅛	2,300	⅛	⅛	..	Colombia Syndicate		$2,000,000	$1	....	.....	3¼	.76	2	½	¾	⅛
2¾	1½	200	1½	1½	..	Consolidated Royal		$5,527,875	$10	7½cQ	4-25-31	8⅞	6¼	11⅛	2½	5⅞	2
⅝	¼	No sales.	..	..	¼	Crown Central		.....	....	....	.....	..	..	..	..	..	..
5	2	100	3½	3½	..	Darby Petroleum		1,019,392	N.P.	....	10-15-30	33½	3¼	26	6½	21¾	4¼
6	2½	100	3¼	3¼	..	Derby Oil & Refining	(sh)	500,000	N.P.	....	.....	2¼	1	11	2	11	2
40⅛	26	No sales.	..	..	..	Derby Oil & Refining pfd.		48,500	N.P.	....	.....	21⅛	7½	44	20¾	60	30
75½	38	10,200	64	56½	56⅞	Gulf Oil Corp.	(sh)	4,504,921	$25	37½cQ	7- 1-31	165	101⅛	209	115	166⅞	58½
⅝	¼	20,600	⅞	⅜	⅞	Intercontinental Petroleum		$5,682,000	$5	....	.....	3⅜	1	2⅞	⅝	1¾	⅝
1⅞	½	1,800	1	⅞	..	Kirby Petroleum	(sh)	750,000	N.P.	....	.....	3	1¼	3⅝	1¼	3	⅞
1½	½	1,200	¾	⅝	..	Leonard Oil & Development		$50,000,000	$25	....	.....	9¾	5⅛	6⅛	1	4¾	½
6¾	3½	No sales.	..	..	..	Lion Oil & Refining	(sh)	250,000	N.P.	....	10-27-30	43⅞	20	38⅞	18	29	4⅞
25	14⅛	2,700	18½	17¼	17⅞	Lone Star Gas	(sh)	5,000,000	N.P.	22cQ	6-30-31	69⅛	48½	67⅞	28	55⅞	19⅝
½	⅛	800	¼	⅛	¼	Magdalena Syndicate	(sh)	850,000	$1	....	.....	1⅞	½	1¼	½	½	⅛
5	3	100	4	4	..	Margay Oil Corp.		160,000	N.P.	....	7-10-30	48½	32	38½	14	16	3
4⅞	1½	100	3¾	3¾	..	Mexico-Ohio Oil Co.		500,000	N.P.	....	.....	8	2¾	6⅜	2¼	7½	1¾
½	¼	No sales.	..	..	..	Mountain & Gulf		$4,000,000	$1	....	4-15-31	1¾	.76	1½	¼	¾	⅜
5⅞	3⅛	600	4	3¾	..	Mountain Producers		$1,682,182	$10	25cQ	7- 1-31	28⅞	19½	22⅞	7	12⅛	3¾
1½	½	200	¾	⅝	..	New Bradford Oil		$1,095,291	$5	....	4-15-31	5⅝	4¼	5	2½	3½	1⅛
3	1¼	600	1½	1⅜	1⅝	New Mexico and Arizona		$1,000,000	$1	....	.....	11⅞	7⅛	9⅜	2¼	7¼	1½
3¼	1⅛	No sales.	..	..	..	North Central Texas	(sh)	400,000	N.P.	....	9- 2-30	14¼	8½	18½	6⅛	11¼	2⅛
½	⅛	4,200	¼	⅛	⅛	Pandem	(sh)	489,875	N.P.	....	.....	6	2⅛	3½	½	2½	⅛
2	⅝	2,500	1⅝	⅞	..	Pantapec Oil	(sh)	1,506,000	N.P.	....	.....	15⅝	8½	10½	1⅞	4⅜	⅞
1⅝	½	1,700	1⅝	1⅛	..	Reiter-Foster	(sh)	388,584	N.P.	....	12- 2-29	12⅞	4⅛	8½	1⅛	5⅜	1
3	1¼	1,700	2½	1⅞	..	Ryan Consolidated	(sh)	500,000	N.P.	....	.....	12	4⅛	11	2	8⅝	2
1⅜	¾	No sales.	..	..	..	Salt Creek Consolidated	(sh)	1,286,300	$10	....	4- 1-31	7¼	5½	5⅞	1⅞	2½	½
7⅜	4	1,100	5½	5	5½	Salt Creek Producers	(sh)	1,496,859	$10	35cQ	5- 1-31	35	23⅛	25⅞	9	15¼	5¼
5¼	1	4,300	2⅜	1⅞	..	Sunray Oil Corp.	(sh)	1,163,185	$5	5%Q§	4-15-31	..	..	12	5⅝	10	2
1⅞	⅝	1,200	⅞	¾	..	Venezuelan Petroleum	(sh)	755,090	$5	....	2-15-30	9⅛	4¾	6½	1¾	4½	⅝
3½	1½	No sales.	..	..	..	Woodley Petroleum		$500,000	$1	....	3-31-29	8¼	4⅞	9½	2	5	½
1¾	¼	8,000	1¾	½	1¾	Y Oil & Gas		100,000	N.P.	....	.....	8⅜	2⅛	2⅞	½	2½	⅝

*Ex-dividend. †Unit of trading less than 100 shares. ‡Payable monthly and monthly stock dividend of one-half per cent. §Paid in lieu of regular cash dividend of 2 per cent.

TRANSACTIONS IN OIL SHARES ON NEW YORK STOCK EXCHANGE

Quotations Compiled by Francis, Bro. & Co., Members of the New York Stock Exchange and Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

(Complete record week ending July 4)

1931 High	1931 Low	Week ending July 4 Sales	Week ending July 4 High	Week ending July 4 Low	Close July 8	Stocks—		Outstanding capital	Par value	Div. rate	Last paid	1928 High	1928 Low	1929 High	1929 Low	1930 High	1930 Low
23	15½	2,400	20¾	17	18⅝	Amerada Corp.	(sh)	922,075	N.P.	50cQ	4-30-31	43⅞	27⅛	42⅝	17½	31½	16½
12⅜	5	800	7¾	6½	..	American Republics Corp.	(sh)	209,180	N.P.	....	12-31-31	85	51⅜	64¾	12½	37	5⅛
31	20	No sales.	..	..	..	Associated Oil		$57,260,300	$25	35c	6-30-31	53⅜	37½	47¼	34½	51	30
23⅝	11⅛	11,500	17	15⅛	15¼	Atlantic Refining		$66,763,775	$25	25cQ	6-15-31	66⅜	50	77⅞	30	51⅜	16⅝
14½	5⅜	10,100	9	8¼	7⅞	Barnsdall Corp. A		$56,546,600	$25	25cQ	5-11-31	54	20	49⅛	20	34	8⅝
12	5	28,100	9⅜	8⅜	7¾	Continental Oil of Delaware	(sh)	4,741,554	N.P.	....	12-15-27	..	..	47⅞	18	30½	7¾
47	15¼	12,700	26⅝	23¼	21⅞	General Asphalt	(sh)	413,333	N.P.	75cQ	6-15-31	94⅞	68	94¾	42¼	71½	22⅜
68¼	27	16,900	48	43	40	Houston Oil		$24,968,600	$100	....	10-17-30	167	79	109	26	116⅞	29¼
4⅝	2	500	2¾	2½	..	Indian Refining		$12,564,070	$10	....	10- 1-30	39⅝	9	53	13⅛	17	2
4½	2	200	3⅛	3	2⅝	Louisiana Oil Refining	(sh)	1,190,063	N.P.	....	.....	19¾	9⅜	18	7	12	3½
3¾	1	No sales.	..	..	..	Maracaibo Oil	(sh)	330,000	N.P.	....	.....	25½	12½	18½	5½	10⅜	1⅜
20¾	10⅝	25,600	17	15	14½	Mexican Seaboard	(sh)	1,244,383	N.P.	....	10- 1-24	72	4⅝	50⅜	8¼	37	9¾
16¾	5¾	6,200	10¼	9¼	9	Mid-Continent Petroleum	(sh)	1,857,912	N.P.	....	2-16-31	44½	25⅛	39⅞	22⅛	32	11
19½	7	15,900	11⅜	10¼	10	Ohio Oil	(sh)	6,648,052	N.P.	....	3-14-31	84	58½	79⅞	64¼	32	16
35⅛	25	No sales.	..	..	..	Pan American P. & T.		$50,084,700	$50	40c	7-20-31	50⅞	38¼	69	40½	46½	42
36½	24	100	28½	28½	..	Pan American P. & T. "B"		$121,110,650	$50	40c	7-20-31	59⅞	37¾	69¼	40½	67¼	30
4¼	1½	800	2⅛	1⅞	..	Panhandle P. & R.	(sh)	199,370	N.P.	....	.....	21¾	11½	15¼	3	12¾	1¾
20	10	10	10¼	10¼	..	Panhandle P. & R. pfd.		$2,564,400	$100	....	.....	108	70	76	47½	20	47½
16⅝	4⅜	13,100	9	8½	7⅝	Phillips Petroleum	(sh)	2,593,075	N.P.	....	1- 2-31	53⅞	35¼	47	24¼	44⅝	11½
1½	½	400	¾	¾	⅝	Pierce Oil Corp.		$29,622,831	$25	....	.....	5¼	½	3⅜	1	2½	⅓
3⅜	1	8,700	2¼	2	2	Pierce Petroleum	(sh)	2,500,000	N.P.	....	2-16-31	7	3½	5⅞	½	7⅛	1⅛
20⅜	6½	2,000	10½	10	10	Prairie Oil & Gas		$60,848,000	$25	....	3-31-31	68	46	65⅜	40½	54	11¼
26½	14⅝	11,600	20	17⅜	17⅝	Prairie Pipe Line		$101,250,000	$25	75cQ	6-30-31	280	172	65	45	60	16⅝
6	1⅞	500	3¼	3⅛	3	Producers & Refiners		$37,438,950	$50	....	9-15-23	29⅞	16	25⅞	4	11⅞	1
16	6½	No sales.	..	..	..	Producers & Refiners pfd.		$2,845,350	$50	....	5- 4-25	49⅝	41	46¾	25½	40	11½
11⅞	5½	5,100	8½	7¾	7¼	Pure Oil		$75,959,250	$25	....	9- 1-30	31⅝	19	30¾	20	27¼	7⅝
6⅜	1	5,300	2	1½	1½	Richfield Oil (new)		$52,410,875	N.P.	....	.....	56	23	49⅝	20	9¾	4⅛
10¼	3⅛	3,400	4⅛	4⅜	4	Rio Grande Oil	(sh)	1,236,270	N.P.	....	7-25-30	37½	32	42½	15	25¾	5
42⅝	24⅞	9,400	33¾	31⅛	31	Royal Dutch, N. Y.	(sh)	611,303	....	$1.3404	1-30-31	64	44⅝	64	43⅛	56½	36⅞
34	19	No sales.	..	..	..	Shell Transport & Trading Co.		£23,985,000	£1	$0.966	7- 6-31	47⅞	41⅜	51½	40⅝	48⅝	26
10¼	4½	20,100	7⅞	6¾	6½	Shell Union Oil	(sh)	13,066,497	N.P.	....	6-30-30	39¼	23¼	31¾	19	25½	5¼
11	5	1,300	8¼	7	..	Simms Petroleum		$8,353,620	$10	....	9-15-30	27½	18¼	40⅛	15	37	5⅝
15⅞	6¼	84,600	11⅝	9¾	9⅝	Sinclair Consolidated	(sh)	5,500,000	N.P.	25cQ	4-15-31	46¾	17⅜	45	21	32	9¾
103	77	No sales.	..	..	..	Sinclair Consolidated pfd.		$16,025,250	$100	$2Q	5-16-31	110	102½	111	103	112¼	86
12⅞	3½	1,400	6	5½	..	Skelly Oil		$27,441,250	$25	....	12-15-30	42⅝	25	40½	28	12	10⅛
51¾	31⅛	25,500	39½	37⅛	36¾	Standard of California	(sh)	12,594,098	N.P.	62½cQ	6-15-31	80	63	81⅞	51½	75	42½
19	8¾	300	13½	12½	..	Standard of Kansas		$8,000,000	$25	....	3-16-31	37¾	15	33¾	18	49	14⅜
52½	30⅝	91,100	40⅞	38⅛	37⅞	Standard Oil of New Jersey		$634,999,200	$25	25cQ‡	6-15-31	59⅜	37¾	83	49	84⅞	32½
26	13⅞	50,600	18½	17½	17⅛	Standard Oil of New York		$445,223,675	$25	40cQ	6-15-31	33¼	28⅝	48⅛	31¾	40⅝	19⅝
45¼	31	100	36	36	..	Sun Oil	(sh)	1,416,869	N.P.	25cQ	6-15-31	77	31½	68⅜	55	70	39
1⅜	¾	700	⅞	¾	¾	Superior Oil Corp.	(sh)	776,979	N.P.	....	12-20-30	..	..	24	5¼	9⅜	¾
36¼	18	47,100	24¾	22⅞	22	The Texas Corporation		$246,204,900	$25	50cQ	7- 1-31	74¾	50	71⅞	50	60½	28¼
6½	2½	500	4⅛	3¾	3½	Texas Pacific Coal & Oil Co.		$9,304,890	$10	....	12-31-29	26⅝	12⅛	23⅞	9½	14½	4
18	10½	No sales.	..	..	..	Tide Water Oil	(sh)	2,191,759	N.P.	15cQ	6-30-31	41½	19⅝	40	14	31	13
83	54	No sales.	..	..	..	Tide Water Oil pfd.	(sh)	19,947,000	N.P.	$1.25Q	5-16-31	100⅛	86	97½	85⅛	94⅞	71
9	4	5,900	6⅜	5⅜	5¼	Tide Water Associated	(sh)	5,560,424	N.P.	30cSA	2-16-31	25	14¾	23½	10	17¾	5⅞
68	38	1,500	48	44½	45	Tide Water Associated pfd.		$73,284,500	....	$1.50Q	7- 1-31	..	..	90⅞	74⅛	89¾	55
26⅝	14	4,200	19	18	17⅝	Union Oil of California		$104,342,375	$25	50cQ	5- 9-31	58	42⅜	57	42⅛	50	10⅛
25⅛	20	400	21⅞	21½	21	Union Tank Car	(sh)	1,254,048	$100	40cQ	6- 1-31	128½	110	163¾	121⅞	38½	23
7⅜	1⅝	600	3⅝	3	..	Warner-Quinlan	(sh)	632,948	N.P.	....	7- 1-30	44⅞	26	42⅞	15	27	4¼
9⅜	3½	900	6	5½	..	Wilcox Oil & Gas	(sh)	428,907	N.P.	....	5-10-28	..	..	29¾	12⅞	21	6½

*Ex-dividend. †Unit of trading less than 100 shares. ‡Plus extra dividend of 25 cents.

In comparing highs and lows for the several years in the three tables, it will be necessary to take into consideration cases where there have been stock split-ups.

ROCKY MOUNTAIN AREA

(Continued from Page 49)

Section 2-7s-21, is coring at 4,216 feet, and its No. 1 Chapman, C SW SW, Section 2-7-21, is changing over to rotary. It is bottomed at 839 feet where the 13⅜-inch was cemented.

Carbon Oil & Gas Co.'s No. 1 Armstrong, SW cor. NW, Section 7-7-22, to the east of the discovery, is drilling at 3,190 feet.

Liberty County

The Bear's Den structure is showing considerable activity and two new operations were reported this week. G. C. Howard's No. 2 Ritter, C NE SE, Section 12-36-5e, joint with Sunburst Oil & Gas Co., and Liberty Gas Co.'s No. 1 McDowell, C SE SW, Section 13-36-5e, have rigs up. G. C. Howard and others' No. 1 Lange, C SE SW, Section 7-36-6e, is drilling at 1,900 feet after casing off 1,000,000 feet of gas in sand at 1,255 feet, and his No. 2 Schoonover, C SE NE, Section 13-36-5e, is rigging up. People's Oil & Gas Co.'s No. 1 First National Bank, C SE NW, Section 17-36-6e, is drilling at 600 feet.

The Eleanor Association's No. 1 Elanor, SE SE, Section 11-33-6e, Utopia district, formerly the Utopia Oil Co., is bottomed at 3,214 feet with a hole full of water and fishing for tools.

Toole County

Two operations in the Border Field are active. Oil Drillers, Ltd.'s No. 1 Farbo, NE SE SE, Section 3-37-4w, is drilling at 2,200 feet and carrying the 8¼-inch at 2,003 feet, and the Askalta Oil Co.'s No. 1 Farbo, SE cor. NE, Section 2-37-4w, is drilling below 2,000 feet and looking for point to land casing.

In the Kevin-Sunburst Field there was one new operation reported in the Anaconda Petroleum Co.'s No. 1 Nelson, SE NE SE, Section 19-36-2w, which spudded to 110 feet and shut down. Same company's No. 1, SW cor. NE, Section 19-36-2w, is shut down at 1,580 feet.

Rosebud County

The Prairie Oil & Gas Co.'s No. 1-X, Contract 3, NE SW NW, Section 26-10-39, Porcupine Dome, drilled by whipstock to 1,955 feet and is shut down. Total depth is 2,415 feet. A report that a rotary is to be moved in in an effort to get through the big water horizon at 2,400 feet, which has baffled all attempts in several wells, is lacking official confirmation. Its No. 1, Contract 4, SE SW SW, Section 28-11-39, is shut down at 1,360 feet without making any new hole following the resumption of operations last month.

Hill County

Montana Consolidated Gas Co.'s No. 1 Stranahan, NW cor. NE, Section 14-32-17e, Box Elder district, which was reported a completion last week without being tested, has been shut in at a total depth of 1,275 feet and is estimated at 8,000,000 feet a day. Same company's No. 2 Roebuck, C NE SE, Section 33-33-12e, Kremlin district, is drilling at 900 feet.

Cascade County

Andover Oil Co.'s No. 1 Floweree, NW cor. SE, Section 20-21-2w, Big Coulee, is drilling below 1,850 feet. It had water in sand at 1,685-95 feet.

Teton County

California Co.'s No. 1 Sullivan, NW NE NW, Section 34-27-7w, Bynum district, is drilling at 605 feet, and Trans-American Oil Co.'s No. 1 Lackey, SE NE NW, Section 28-24-8w, Teton district, is drilling at 300 feet and is believed to be near the top of the Madison lime.

Runs From the Fields

Average daily pipe line runs in week ending July 11:

WYOMING	
Salt Creek	23,060
Big Muddy	1,880
Byron	5
Dallas-Derby	520
Dutton Creek	110
Elk Basin	540
Ferris	40
Frannie	50
Grass Creek	1,860
Hudson	390
LaBarge	1,060
Lance Creek	280
Lost Soldier	2,960
Lovell	.....
Oregon Basin	2,060
Osage	1,220
Rock River	1,930
Poison Spider	220
Simpson Ridge	.....
South Casper	.....
Teapot	20
Warm Springs	.....
Total Wyoming	38,205
MONTANA	
Buckley-Border	500
Cat Creek	990
Dry Creek	410
Kevin-Sunburst	4,610
Lake Basin	70
Pondera	1,500
Total Montana	8,080
COLORADO	
Florence	170
Fort Collins	970
Iles	1,310
Moffat	850
Orchard	250
Rangely	20
Tow Creek	300
Walden	160
Total Colorado	4,130
NEW MEXICO	
Rattlesnake	825
Hogback	500
Table Mesa	70
Artesia	978
Cap Rock	512
Getty	195
Hobbs	35,085
Jal	1,000
Lea City	2,494
Eunice	454
Total New Mexico	42,113
Total Rocky Mountain area	92,528
Total previous week	98,961
Difference	6,433

PROPOSE NEW TYPE OF NATURAL GAS CONTRACT

(Continued from Page 94)

2 cents, but less than 4 cents per gallon, 20 per cent of the value of the gasoline.

(c) When average price is 4 cents, but less than 6 cents per gallon, 25 per cent of the value of the gasoline.

(d) When the average price is 6 cents per gallon, or more, 33⅓ per cent of the value of the gasoline.

Should the gas from any well or wells sold hereunder be delivered to buyer by adequate well pressure furnished by seller then buyer is to pay seller an extra 5 per cent additional to the various percentages set out in the above schedules. For example, should the gas test less than .75 gallon per 1,000 feet and sales price of gasoline be less than 2 cents per gallon then, should well pressure be furnished by seller, to the 5 per cent set out in the schedule as payment for that class of gas an extra 5 per cent will be added making the total consideration 10 per cent for that character of well pressure gas; and in like manner will the extra 5 per cent be added to any other figure in the above schedules, should adequate well pressure be furnished by seller, and sales price per gallon of gasoline increases and/or the gas be in a higher category with respect to quality; but in no event, however, will the price paid seller for well pressure gas be in excess of 33⅓ per cent.

CARE OF FOAM TYPE EQUIPMENT IMPORTANT

(Continued from Page 94)

bonate dissolved in water in the outer container, which is marked on the inside to show the proper level. The bottle is then filled with 4 ounces of sulphuric acid, the stopple replaced, and the bottle set in the cage. When the top is screwed in place, the extinguisher is ready for use.

When operating, the acid combines with the sodium bicarbonate to form carbon dioxide gas, sodium sulphate, and water. The gas so generated furnishes the pressure to force the liquid through the nozzle. The sodium sulphate has no action on the fire but is simply a by-product of the reaction. These extinguishers are never tested but should be pumped and recharged annually.

The charge for foam extinguishers is furnished in three parts, "A" powder, chiefly aluminum sulphate, for the inner chamber; "B" powder, sodium bicarbonate, and "C" liquid, a licorice compound, for the outer chamber. The charging operation is as follows: Mix "B" powder with 2 gallons of water at about 100° F., stirring until thoroughly dissolved. Add "C" liquid, mix and pour into outer shell of extinguisher; add water to level indicated on shell. Next dissolve "A" powder in 2½ pints of water at approximately 150° F., pour into inner chamber and add sufficient water to indicated level and set in place in the outer shell. Replace the metal cap, screw on head, and the operation is finished.

In action, aluminum hydroxide, a gelatinous substance is formed together with carbon dioxide gas. The latter in this case has a double function, serving to furnish pressure to eject the liquid and at the same time forming myriads of small bubbles with the aluminum hydroxide and the licorice compound creating a froth which stands up for a long time.

When recharging, it is important to wash all parts thoroughly, running water through the hose to be sure it is clear.

Life of Extinguishers

Foam extinguishers are good as long as the liquids react properly on each other or until their volumes have decreased 25 per cent but should be tested annually unless governed by local ordinance.

In testing this type, the head is removed and a small amount of liquid taken from both chambers. This is mixed in the ratio of one part from the inner chamber to two from the outer shell and the resultant foam should be at least eight times the volume of the two samples used in the test. If less, the extinguisher should be recharged.

From the foregoing it is obvious that this equipment should be stored and transported in an upright position. In operating both should be inverted to start action. Jarring gently, in an inverted position, will loosen the stopper or cap on the inner chamber. If after this operation no liquid flows from the nozzle, there is probably an obstruction, and the extinguisher should be discarded at a safe distance in case it should burst from internal pressure. By holding the thumb tightly over the nozzle for a short time this allows pressure to build up and thus increases the range. The effectiveness of the stream may be augmented by using the thumb to form a spray. Never attempt to remove the cap from an extinguisher which has failed to operate—report it to your division safety engineer. Likewise never attempt to stop the flow after it has started but allow the equipment to completely discharge itself.

Operation of Tanks

The operation of the 40-gallon foam tanks is practically the same as for the 2½-gallon size except that in the larger size it is necessary to open a valve on top when ready to use.

When operating the soda-acid equipment the stream should be directed the same as any stream of water, fanning it out with the thumb, as mentioned before, if it is desired to cover more area. Foam streams, to be effective, should be carefully sprayed over the surface of the burning liquid from a point as near the level of this liquid as possible, or if this is not possible, directed against the side of the container so that it will flow gently down and out on top of the burning material. Shooting the foam down into a liquid breaks up the bubbles and renders it useless.

Obviously, being for different purposes, soda-acid and foam extinguishers should not be used on the same point.

Extinguishers are so placed as to be quickly available and are so distributed that each type is in a location where it is most liable to be needed. They should be so installed that the top is never more than 5 feet from the floor and removable instantly from their pedestal or hanger. Hung near doors in compressor and engine rooms they may be accessible from the outside when approach might be cut off from the inside.

Above everything, see to it that any extinguishers which may be used or accidentally discharged are refilled at once, the date of recharge marked on the tag and the equipment put in its regular place.

Efficient and intelligent handling of this equipment may be called for very unexpectedly. Get thoroughly acquainted with your extinguisher now in order that such an emergency may find you ready.

STANDARD GASOLINE CO. EMPLOYES' BENEFIT FUND

(Continued from Page 94)

the fund committee pay the fund to such person as in their judgment will properly apply it.

Section 7. Any employe laid off on account of lack of work and who shall be reinstated in the service of the company with full protection of his seniority shall be entitled to reinstatement of his benefit fund membership without any charge except the payment of any assessments which may have become due and payable during his absence.

Section 8. Any member retired on pension under the company plan shall be eligible to continue his membership during the life of his pension.

Section 9. Employes of Standard Gasoline Co. on part-time work shall be entitled to full benefits under the present rules and regulations.

Section 10. A member transferred from Standard Gasoline Co. to another department or subsidiary of the Standard Oil Co. of California shall be in good standing until the next two funds, established prior to date of transfer and to which he has contributed, shall have been paid, after which he will cease to be a member.

ARTICLE 4

Funds

Section 1. All funds of the Standard Gasoline employes benefit fund shall be deposited in a savings account in a bank designated by the fund committee.

Section 2. Interest accrued on the fund shall apply toward the operating expense of the fund.

Section 3. Upon the death of a member, the secretary-treasurer shall immediately pay the fund to the beneficiary named, as the beneficiary may direct, or in case no beneficiary is named, as the fund committee shall direct.

ARTICLE 5

Duties of the Fund Committee

Section 1. The fund committee shall appoint special agents to collect contributions to the fund.

Section 2. In case of serious accident or illness, a member of the fund committee shall visit the member and obtain information regarding relatives or friends with whom they should communicate.

Section 3. The fund committee will assist a member or the widow or family by visiting the undertaker or making funeral arrangements, if so desired.

Section 4. The management of the fund shall be vested in the fund committee. The concurrence of at least three (3) members of said committee shall be necessary to any act or decision of said committee.

ARTICLE 6

Amendments

The by-laws of the Standard Gasoline Employes Benefit Fund may be amended at any time and from time to time by an unanimous vote of the fund committee, such amendment to become effective thirty (30) days after publication in the Booster; provided the chairman of the fund committee has not, within that time, received in writing dissenting votes against such proposed amendment from at least one-half of the members of the fund.

INDUSTRY MUST DRILL 20,000 WELLS PER YEAR

(Continued from Page 19)

burden on the crude oil price structure. Further effort at oil finding under these circumstances, it is felt, is clearly superflous. The idea appears to be generally accepted that geological expense and geological staff can safely be eliminated. Sometime in the future, when the need arises, we can recall our former geologists, and instruct them to discover whatever new oil fields we may desire. What could be simpler?

Must Continue Exploration

But geologists know, of course, that oil is not found that way. The price of oil finding is eternal vigilance. Continued, unremitting effort, intimate familiarity with the progress of exploration as

well as with the surface geology throughout the territory in question; these, among others, are the indispensable attributes of intelligent search for petroleum. Recent phenomenal success in discovery is due, as a matter of fact, largely to the momentum which oil finding activity acquired from the stimulus of the war, 15 years ago. The search inaugurated at that time has only within the last five years become really effective. Any suspension of effort now must inevitably cause a similar lag in the effectiveness of our effort when it is finally renewed.

And the finding effort must eventually be renewed. If we face the truth frankly, indeed, we know that our search cannot safely be suspended. The petroleum industry at the moment is in the throes of overproduction, but there is no suggestion of an oversupply in sight. Our trouble is not that we have found too much oil. It is rather that we insist on producing tomorrow's oil today; we insist on bringing to the surface and forcing on the market every day all the oil that is available to our wells through the 24 hours, regardless of the current demand for oil, and regardless of this economic waste of a commodity which may be sorely needed tomorrow. In other words, as an industry, we are powerless to control our production rate, despite the fact that our reserves, measured against our assured future requirements, are far from imposing.

Finding Has Passed Maximum

If you are one of these who contend that oil finding has progressed, and acquired efficiency, to the point where it can easily maintain reserves of petroleum adequate to our future needs, please consider, for a moment the character of the curve which portrays our discovery rate over the past 10 years. Such a graph, constructed by plotting on one axis numbers of major pools discovered in any one year against time on the other axis, shows an all time peak already nearly four years behind us which is more than twice as high as the average position of the finding curve over the past 10 years and 50 per cent higher than the average position of the curve subsequent to the peak. In other words, our finding effort has passed its maximum of efficiency and has fallen far below what it has been. Incidentally the position it must occupy, if our supply of oil is to continue to be adequate in volume, has barely been maintained over the past three years. Major pools are arbitrarily defined as pools, the ultimate production from which is greater than 20,000,000 bbls. This average size over the past 10 years is of the order of 100,000,000 bbls.

Consider also the unmistakably growing tendency over recent years for new discoveries to confine themselves to certain relatively restricted areas, in contrast to an earlier period when new finds were more generally disseminated. While the greatest emphasis in our finding effort has always been more or less localized and greatest activity has always centered to some degree in one area, yet, in the past, the oil producing industry has gradually spread out pretty well over the nation. It has consistently expanded into new areas while it consolidated its position in old areas. Recently, the tendency toward expansion has faltered or ceased, and is giving place to a reaction which has the effect of concentrating new discoveries in two principal areas, namely, Texas and California. Out of 119 major discoveries in the past 10 years, 22 were made in California, and 50 were made in Texas. Out of 78 such discoveries during the past five years, 33 were made in Texas. Obviously the hunting grounds in the United States over which the commercial oil field quarry can be pursued and captured is restricting itself to a degree which can only be compensated by a heightened intensity of search.

Reserve Not Too Large

Ten billion barrels of oil is not a large reserve. Our normal requirements, even without further increase, will exhaust the reserve in sight within about 10 years. Of course, the reserve cannot be made entirely available within 10 years. It cannot be produced so fast. If we are to meet the certain demand for oil, we geologists must not fail to find a minimum of 1,000,000,000 bbls. of oil per year. Ten major fields of average size annually. Look at the record for the first half of 1931, and tell me if we are meeting our obligation currently.

There is much talk of imports and exports of petroleum in connection with our national requirements. The world's petroleum reserve outside the United States is more adequate for the world's needs outside the United States than our domestic reserve is for our domestic needs. At the moment all of us would rejoice if the President would in some fashion prohibit imports, but our welfare over the extended future will apparently not be served by an import tax on oil. Be that as it may, exports and imports are both of insignificant proportions and of little moment in any analysis of oil supply and demand over a period of years.

Must Drill 20,000 Wells Yearly

Consider one further factor, please, in connection with the problem of oil finding. In order to find and produce the 23,000,000,000 bbls. of oil involved in the accomplishment of the producing industry during the last 14 years there have been or will be drilled nearly 400,000 wells. To find and produce the volume of crude oil required by this nation each year we must drill on the average, basing our calculation on this record, which we are proud to display, some 20,000 wells. Our drilling record for 1930 is far below this average, and for 1931, so far, it is far lower still. One thing is certain, we cannot find oil if we do not drill the wells. Our requirements for oil, on this basis, demand that we spend each year for drilling alone $500,000,000; that we explore and condemn by drilling some 3,000,000 acres of prospective oil land to a depth exceeding on the average 3,000 feet; and that we explore and prove for production each year some 50,000 acres of oil land. To do this well, we must keep our ratio of dry holes down to one in four, yet we are drilling one dry hole out of each three wells a great deal of the time and over much of our hunting grounds.

New Supply Lagging

In recapitulation, then, I would emphasize that the geologist who is to keep America supplied with oil has his task cut out for him and has his responsibility heavily upon him. There can be no extended sea voyage or other vacation for him, nor can he be cast aside not to be recalled. In spite of overproduction, new supply is actually lagging at the moment. Instead of enabling the industry to dispense with him, overproduction, such as we witness today in East Texas, only makes the geologist more indispensable to the industry, and only makes more certain his retention by the oil industry. That geologists can find oil and that geologists, with the help of geophysicists, do find oil is abundantly proven by the record. Judged by recent tendencies, geologists seem likely to find an increasing share of the nation's supply over future years in Texas and its environs, and in California. But geologists cannot find oil, in Texas or elsewhere, and oil cannot be found in the volume our present consumption rate demands, unless he is given adequate support, and opportunity to continue without interruption the intensive nation-wide study he has been engaged upon during the last 15 years, and unless generous funds for exploration are placed at his command.

INTERPRETATION NEW CODE IS EXPLAINED

(Continued from Page 99)

sels operators or other companies or persons are using such products.

Interpretation of Rule 17—All refiners, distributors, jobbers, wholesalers and retailers are required to conspicuously post the specified price; but the rule does not in any way require the price posted by any refiner, distributor, jobber, wholesaler or retailer to be the same price posted by his competitor. The rule contemplates that each one will determine for himself the prices at which he contemplates selling his products; post those prices on his premises at a place conveniently accessible during business hours to the public, and adhere to such prices until new ones are posted.

The posting of prices under this rule means the posting of tank car prices, tank wagon prices, and service station prices at the respective places from which deliveries are made. Tank car prices should be conspicuously posted at terminals where tank cars are loaded and at the refinery or refinery office; tank wagon prices at the bulk plant or wholesale distributing centers, and service station prices at all service stations. By tank car prices is meant spot prices, prices at which sales are made under contract, and all allowances made from either spot or contract prices. The posting of tank car prices may be either on the basis of f.o.b. loading point, at destination, or in any other manner which will clearly set out the price actually paid by the purchaser.

The granting of any rebate allowance, bonus, concession, benefit, unusual credit, or the use of any plan, device, or scheme, which may directly or indirectly permit the buyer to obtain gasoline, kerosene, or motor oil, at a lower net cost to the buyer without posting the full details thereof, at the place of delivery, shall be considered a secret rebate.

Commercial accounts need not be posted when they apply only to written contracts for charge accounts for the delivery into commercial vehicles properly licensed and used for the transportation or delivery of passengers, merchandise, freight or express. Only vehicles bearing a commercial license and used in a commercial business are entitled to the commercial discount.

In states which do not issue special licenses to commercial vehicles, a price not posted should be allowed only to such vehicles as are usually licensed under the commercial series by nearby states which do issue special licenses to commercial vehicles. Trucks, buses and taxicabs are generally regarded as being commercial vehicles. Vehicles bearing pleasure car licenses, whether operated by salesmen, executives, employes or dealers, are not entitled to the commercial discount. Any deviation from this practice requires the posting of the price.

NEW RECTIFYING UNIT HANDLES 3,000 BARRELS

(Continued from Page 93)

thermostat, which records and controls the kettle temperature, and a recording thermometer for the column top temperature.

Raw gasoline on the way to the column passes through the heat exchanger at a constant rate, flowing around the tubes. Heat is recovered from the rectified gasoline delivered by the kettle. In the exchanger a 20-25° F. approach between fluids is obtained at the cold end. Tubes are three-quarters-inch diameter, No. 18 gauge, admiralty metal.

Raw gasoline from the exchanger enters the rectifying column at any of three points near the mid-section. The column is fitted with cast iron bubble trays. The trays below the gasoline entrance point are used for stripping and those above for fractionation. The liquid passes down through the column and out at the bottom to an external kettle or vaporizer.

Steam flow to this kettle is controlled by a motor valve, and the condensate is removed by a trap. The liquid flow from the kettle is governed by a liquid level controller. The liquid is heated in the kettle to about 340° F. and then it enters the exchanger, flowing through the tubes. From the exchanger the finished gasoline is delivered to storage.

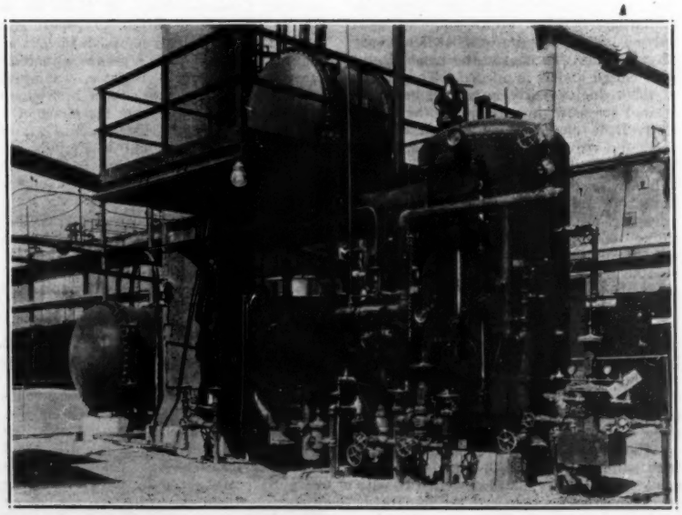
The vapors which flow up through the trays leave the column at the top and enter a condenser. Here the vapors are cooled to about 60° F., the resulting condensate flowing into the reflux accumulator. Liquid in excess of that required for reflux together with uncondensed vapors passes out of the system to fuel lines through a pilot operated back pressure valve which maintains a pressure of about 140 pounds on the entire unit.

This rectification process produces a product having a Reid vapor pressure at 100° F. of 9 pounds, totally eliminating former handling losses in treating and storage. This also enables the refiner to meet present motor fuel specifications with a minimum loss in volume production. Motor fuel thus rectified is a very desirable material for it has high volatility due to butane content and low vapor pressure because of the absence of propane.

This type of unit was originally developed for the rectification of natural gasoline, but, during the past year and a half, it has been generally used under controlled conditions for stripping pressure distillates of undesirable components. Such processing has resulted in marked savings in acid treating costs, an economical feature which has actually overshadowed the original motive of substantially reducing both handling and rerunning. At present, attention is being given to the rectification of straight-run gasoline. Several refineries have already demonstrated the feasibility of this processing through savings effected in handling losses by reason of the reduced vapor pressure.—Reprinted from Heat Engineering.

WILDCAT IN SOUTH DAKOTA

The Gypsy Oil Co.'s No. 1 Hunter, Section 28-3-16, Pennington County, western South Dakota, was drilling on the last report at 2,910 feet. The test is a wildcat and is located on a block of 70,000 acres on the Wall structure. Rotary tools are being used.



Close-up view of the new recitfying unit at the Olean, N. Y., refinery of the Vacuum Oil Co. The vapor condenser is located on platform. On the ground from left to right are the heat exchanger, base of column, end of kettle and reflux accumulator.

GUM TESTING WITH THE OXYGEN BOMB

(Continued from Page 26)

cial brick inclosures or located outside of the operating room, while control manuals were separated by walls. Having the bomb and the controls separated is unhandy for routine work aside from the fact that too much piping is required between the gauge and the bomb. Each joint offers a possibility for a leak, and the fewer joints there are, the better is the installation. The arrangement shown in Figure 2 is compact, practical and safe. The pressure from the supply tank is reduced by means of a diaphragm reducing valve of the type similar to those used for welding. The pressure on the bomb (low-pressure side) is indicated on a gauge which forms an integral part of the reducing valve. A safety (pop-off) valve is inserted between the reducing valve and bomb, permitting a maximum pressure of 150 pounds. No valves are used between the bomb and the test pressure gauge.

This arrangement can be called foolproof. Should the reducing valve fail, then there is the pop-off valve. Should that fail, too, then there is the test gauge. It is highly improbable that all three instruments should go out of commission at the same time. As will be noted, there are only three valves in the double installation besides tank and reducing valves. This permits utmost simplicity of operation. To charge the bomb, Valve A is closed and B is opened. The handle of the reducing valve is turned until the desired pressure is reached in the bomb. Then B is closed, A is opened and finally the reducing valve is closed.

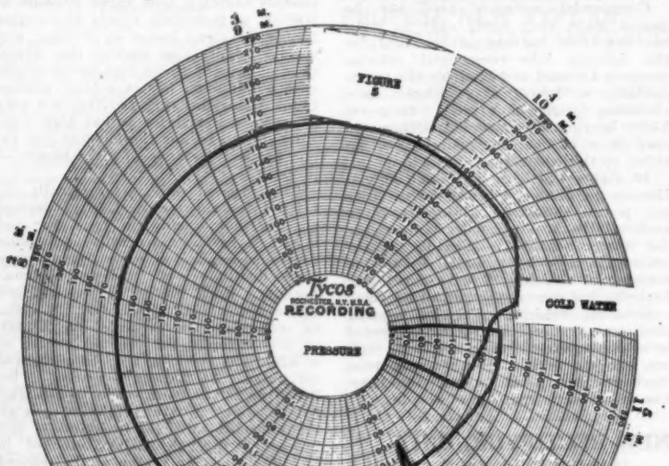
Securing Reliable Results

In order to obtain consistent results the air in the bomb must be displaced by releasing the oxygen and repeating the filling operation once or twice. The starting pressure most commonly applied is 100 pounds at 32° F., although in some places the practice has developed to charge with 100 pounds at 50° to 60° F. While there is no special reason to start with exactly 100 pounds, this pressure has been adopted as being convenient. A charging temperature of 32° F. is preferable to any other, as it is easy to reproduce and to maintain over any desired length of time.

After purging, the bomb is charged with approximately 120 pounds of oxygen. The water bath is filled with cracked ice and water and the apparatus is allowed to stand till the pressure has become constant. If there are no leaks, the equilibrium is usually reached in about one-half to three-fourths of an hour. Valve B is then slightly cracked to reduce the pressure to exactly 100 pounds. The temperature of the water bath is raised to 212° F. and maintained at this temperature for the duration of the test. The pressure in the bomb rises quickly to 120 to 160 pounds, depending upon the volatility of the gasoline tested and the volume ratio of fuel to oxygen. At the end of the period, the hot water is drawn off and the bomb is chilled quickly with cold water. This reduces losses of gasoline due to frothing upon release of the pressure through Valve B. In order to make the test adaptable for routine testing, manipulations must be simple and the apparatus should require as little attention as possible during the reaction period. This can be achieved by the use of recording pressure gauges.

Use Recording Gauge

The recording pressure gauge has several advantages over the dial pressure gauge for the present purpose. Leaks in the closed system can be detected with a single glance at the chart, whereas with the indicating gauge the operator must make readings at intervals. Maintenance of temperature and time are recorded, and many sources of human errors are excluded. At the laboratories of the Texas Pacific Coal & Oil Co., 6-hour recording pressure gauges, having an indicating pressure range of from 60 to 220 pounds, are employed. Pressure can be read to the nearest pound, which is as accurate as any dial pressure gauge of the same range will register. Samples of recording charts are shown in Figures 3 to 6. Figure 3 presents the chart of a perfect run. Figure 4 represents a run in which the bomb had a slight leak. Note that the curve begins to drop as soon as the maximum pressure has been reached. In the run shown in Figure 5 the maximum pressure is maintained for about two hours, after which a slight drop begins; after two more hours the drop is suddenly intensified. The gasoline tested here is evidently unstable. During the run shown in Figure 6 the temperature of the water bath dropped for some reason, which is indicated by the kink in the curve.



Leaks

The greatest difficulty of the test probably consists in making the closed system absolutely leak tight. Possibilities for leaks exist around threads, couplings and from under the lid of the bomb. Threads are most easily fixed by either sweating or welding them in. Litharge cement or white lead are not as satisfactory, as they have a tendency to become brittle and break away under the rough treatment to which certain parts are subjected. The coupling used at point C of Figure 2 is preferable of the flat type requiring a gasket. Ground-in couplings wear out, being tightened and detached so frequently. Gaskets are easily replaced. All valves should be of the steel needle type. Only the best makes give satisfactory service. Cheaper grades soon develop leaks, causing endless troubles.

The sensitivity of the test is determined by the volume ratio of oxygen to gasoline. The lower the ratio, the more easily is the point noticed at which the gasoline begins to react with the oxygen. If the ratio is too low, the quantity of gum formed during a test in which a considerable percentage of the oxygen enters reaction may be materially affected by the rapidly dropping pressure. The ratio in the bomb as used by the Ethyl Gasoline Corp. is approximately 4½ to 1, while that used by the Army is close to 1¾ to 1. The induction period is not affected by the ratio; neither is the quantity of gum formed unless the pressure falls to a very low figure for a substantial part of the test. Comparative tests with 100 and 200 cc. samples yielded the following figures:

TABLE 1

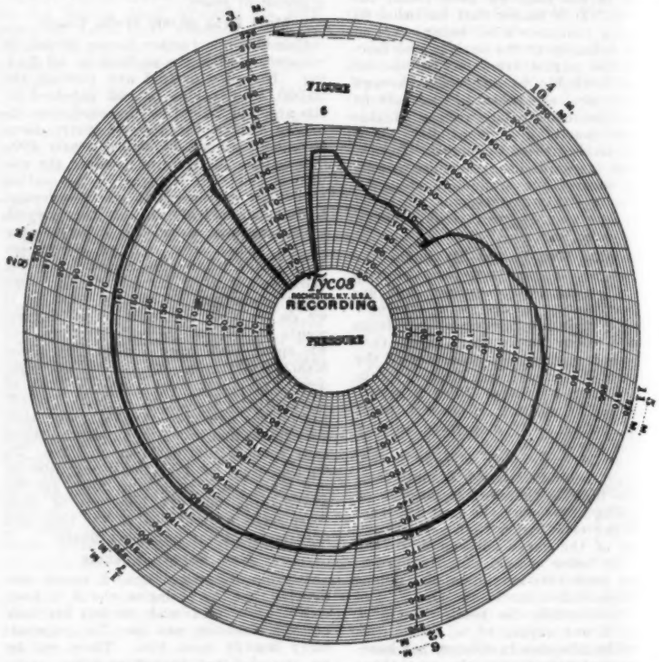
Sample	4 oz.	8 oz.
1	11	12 mg. gm.
2	12	10 mg. gm.
3	14	13 mg. gm.
4	5	4 mg. gm.
5	15	15 mg. gm.
6	13	12 mg. gm.

The water bath used with the equipment should be such that it can be emptied quickly, chilled and heated quickly and maintained at 212° F. without being watched. Figure 7 shows a suitable design. Direct steam is used for heating. This makes refilling unnecessary and prevents running dry. Overflow lines take care of excess water and steam. No reflux condenser is used, making the entire installation very compact. The water can be heated from 32° F. to boiling in less than one minute.

The bottles used to hold the sample during the exposure to oxygen must be well cleaned previous to the test if fair checks are desired. After washing with a soap or scouring powder and rinsing with water they should be dried, rinsed with a mixture of alcohol and benzol or acetone and benzol, and dried again. The sample is then filtered into the bottle; a porcelain crucible in inverted position is placed over the bottle opening and the bottle is introduced into the dry bomb. The porcelain crucible prevents solid particles that might be blown into the bomb from entering the bottle. Crucibles are better than loose corks, as it happens quite frequently that corks are pressed tightly into the bottle necks by the inrushing pressure, preventing oxygen circulation.

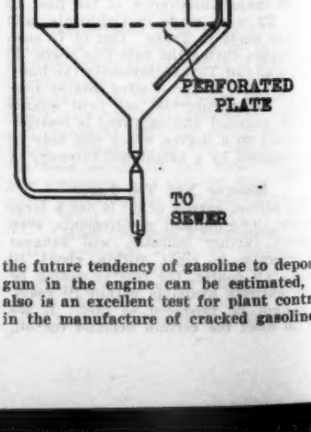
Gum Formation

Gasolines exposed to oxygen frequently are cloudy, having developed gum which is insoluble in the gasoline. Such gum must be included when a sample is evaporated to dryness. For this reason, the bottle is shaken to distribute the sediment evenly and the volume required for evaporation is measured out by means of a pipette. In this manipulation quick operation is more important than extreme accuracy, as the precipitated gum has a tendency to settle. The sample is filtered through a small filter paper which is subsequently washed with a warm alcohol benzol mixture. The total filtrate is evaporated by the air-jet method. A simplified variation of this procedure consists of just evaporating the measured sample without filtering it, provided the bottle had been well cleaned previous to the oxygen test and the inverted crucible had prevented foreign matter from entering.



While the primary purpose of the entire test is to provide a means by which the future tendency of gasoline to deposit gum in the engine can be estimated, it also is an excellent test for plant control in the manufacture of cracked gasolines.

FIGURE 7.



For instance, where Gray vapor-phase treating towers are used, the efficiency of the clay can well be estimated by this method. The old copper dish gum was very unreliable, inasmuch as samples from the rundown line and from the rundown tank were apt to show tremendous differences that appeared entirely illogical. The line sample usually had a very much higher copper dish gum, possibly due to the presence of a small amount of unsaturated compounds which upon standing in the tank evaporated, but in contact with the copper polymerized. Potential gum of rundown and tank sample as determined by the oxygen gum test are more closely related. Comparative figures are shown in the following table:

TABLE 2

Day	Potential rundown	Gum tank	Copperdish Gum rundown	tank
1	5	7	18	21
2	6	5	16	20
3	12	8	18	17
4	10	8	16	22
5	4	7	46	39
6	13	11	103	12
7	11	6	26	43
8	14	13	72	45
9	5	11	38	28
10	3	2	37	39
11	10	8	52	17
12	8	8	43	29
13	10	9	43	17
14	14	11	22	47

GASOLINE MARKET CONTINUES STRONG

(Continued from Page 16)

of the major pipe line companies desire additional crude oil and do not desire to drop any connections to other buyers.

With these conditions in mind, it is believed that regardless of what happens in East Texas it will be necessary to post higher crude oil prices in several fields of the Mid-Continent where local conditions will continue to dominate. Added to this is the possibility that the Texas legislature now in extra session will pass legislation which will correct the present chaotic conditions in East Texas and bring about more stable market conditions in that area. If that happens an early recovery in the posted crude oil prices is certain. This in turn should be reflected in the refinery tank car market on gasoline which has given indications of its strength under unfavorable conditions.

Gasoline and Naphtha

The U. S. Motor market to the trade in Oklahoma (Group 3) was firm at 2¾ to 3 cents the first of the week. Some resale material at 2⅝ cents East Texas was reported. Some buyers are holding off in their purchases, expecting that gasoline will be offered more freely after the middle of the month. It is said that some of the refiners who sell exclusively on the spot market, particularly those in East Texas, will need additional business the latter part of the month and it is assumed by these buyers that the heavy buying of the first half will not continue. Other market students look for a continuance of buying which will readily absorb spot material as it appears on the spot market.

There is a good demand for 400 endpoint gasoline of better than 60 octane number. This material is bringing a minimum of 3 cents and sales as high as 3¼ cents are reported. The lower octane material is bringing very little if any premium over U. S. Motor.

There is so little trading in the higher gravity, lower endpoint grades of gasoline, that prices are usually termed "nominal." Some 390 and 375 endpoint material in storage had been sold at the top of the U. S. Motor price. However, most refiners are asking the usual price differentials.

There is a better demand for 56-58 450 endpoint material. This product still has a few jobber buyers at this season of the year. In addition there have been inquiries and sales to jobbers who have not taken kindly to the recent advances in the U. S. Motor grade.

The 450 endpoint naphthas have a ready market at a low of 2½ cents. Recently there has been some slow-up in the demand for specialty naphthas.

Natural Gasoline

Practically all manufacturers in Oklahoma were quoting 2 cents on Grade AA and 2⅛ cents on Grade A on Tuesday. The other grades were quoted at 1¾ cents. The demand in Oklahoma for intrastate shipment has been excellent and no distress material had made its appearance on the market.

The Texas market continues unsettled. The Texas Railroad Commission has authorized some reductions in natural gasoline tank car rates and this is expected to aid the Texas movement starting next week. Should the shut-down movement under consideration in Oklahoma City and other points receive general support due to the low crude oil prices prevailing, it would be directly reflected in the quantity of natural gasoline available. Many manufacturers are predicting an advance to the U. S. Motor level before the end of the month.

Fuels

A price of 5 cents per barrel appears to be the accepted market for high cold test fuel at East Texas refineries. This establishes a market of from 12 to 15 cents per barrel for similar material in Oklahoma. It is much easier to find a market for lower cold test material of the same gravity at prices from 5 to 15 cents per barrel higher. Due to the low prices for high cold test material several refiners are considering storage programs. It is believed that the fuel oil in storage will show a substantial profit to the holder over the next two years including the cost of storage tanks.

In the gas oil end, high cold test material in East Texas is available as low as one-half cent per gallon basis Group 3. Most of the trading in Oklahoma is in the lower cold test grades. Most refiners are quoted a low of three-quarters for UGI material. The low cold test and low flash gas oils suitable for furnace oil are quoted at a low of 1⅛ cents in Oklahoma. The higher gravity furnace oils are in slow demand at a low of 1¼ cents. At least two East Texas refiners are offering a 38-40 165 flash distillate of 22 color. This product in distress shipments has been sold as low as 1 cent basis Oklahoma.

Lubricants

Most manufacturers, the first of the week, had adopted the lower price schedules for neutral oils and bright stocks which were made effective last week by one of the largest refiners in the State. Some of the smaller refiners in fact had anticipated the reductions and have been quoting lower prices since early in the month.

The price reductions in most cases amounted to one-half cent per gallon. The reductions were uniform in all grades. The nonviscous grades for which there is little demand were also reduced. Bright stocks are lower from one-half to 1 cent per gallon. The reductions in both neutral oils and bright stocks apply to all cold tests. Buyers are not paying as much attention to cold test as they will in the fall. Some manufacturers are expecting an improved market for low cold test lubricants starting at that time. At this time, refiners and compounders are mainly concerned in moving their stocks with little regard to prices.

The wax demand is slow with no important changes in prices.

TUNNEL BEING USED TO EXTINGUISH FIRE IN WELL IN EAST TEXAS POOL

By L. E. Bredberg

TYLER, Tex., July 11.—Bell and Graddy's No. 1 Daniels, which has been burning since June 24, consuming an estimated 16,000 to 18,000 bbls. of oil per day, is doomed to be checked when the 4 by 6 tunnel is completed into the well, 22 feet below the surface at the top of the casing. An 8-inch lateral pipe will be clamped to the surface casing, and the 6-inch pipe in the hole tapped to withdraw oil, and cut down the flow through the bradenhead and tubing. Two streams of burning oil are shooting out the sides of the bradenhead, and another stream is going through the 2½-inch tubing straight into the air, making the fire a most difficult one to extinguish.

The Gulf Production Co. and Shell Petroleum Co. offered their services in fighting the fire, and bringing the well under control, and Joe Russell, superintendent of the former company, is supervising the work now being carried on.

A tunnel, 4 feet wide and 6 feet high, is being dug from the creek bank in to meet the casing, a distance of around 160 feet. Six miners from Picher, Okla., under the direction of Sandy Fagan, are doing the tunneling work. Temperature in the tunnel is kept down by a small motor propelled blower which is forcing air from the outside down into the tunnel through a large conduit. Electric lights are suspended from the ceiling of the tunnel, and a small dump car, operated on a track, hauls the mud and sand from the tunnel as the work progresses. The miners make from 5 to 25 feet per day tunneling, according to the condition of the hole; the last few days they have been slowed up by encountering quick sand which continues to cave.

The Shell Petroleum Corp. has a producer to the south and one to the east and the Gulf Production Co. has one on the west, one of these wells now standing shut in with the connections entirely buried in sand to prevent any possible danger of the well catching on fire from the Daniels' conflagration.

Entrance to tunnel being driven toward Bell and Graddy's No. 1 Daniels.

Bell and Graddy's No. 1 Daniels on fire in the Kilgore Pool, East Texas.

PREPARE ASSOCIATION PROGRAM

The National Petroleum Association is preparing a diversified program for its annual meeting which will be held at Atlantic City, N. J., September 16, 17 and 18. The program will contain several timely subjects dealing with conditions in the oil business and recent developments of interest to refinery technologists.

Following is a list of the subjects which will be discussed:

"The Economics of the Oil Industry"; "East Texas"; "The Oil Situation in California"; "Russia"; "Developments in Aviation During the Past Year"; "Refineries Outside of the United States"; "The Domestic Consumption of Lubricating Oils"; "Changes in Engine Design in Relation to Lubrication Requirements"; "Recent Developments in Petroleum Manufacture"; "The Anti-Trust Laws and American Business"; "The Gasoline Tax Laws and Their Administration"; "The Oil Industry—an Adventure or a Business?"

EAST TEXAS PURCHASE

WICHITA FALLS, Tex., July 13.—W. J. Greene, president of the Faith Oil Corp. of Wichita Falls, confirmed reports that the Faith company had purchased leases on 1,400 acres of oil property in the East Texas Field from Mrs. O. O. Hammonds, of Oklahoma City for approximately $750,000 in cash and oil takings.

CUTS IN ALL FIELDS EAST OF CALIFORNIA

(Continued from Page 28)

the groundwork for a shutdown of most of the wells in that State until the price of oil reaches $1 per barrel. Many oil wells in both States have already been shut down voluntarily because the oil cannot be produced at double or triple the price offered for it by buyers. If the shutdown spreads it will be very embarassing for refiners depending on Kansas and Oklahoma crude, but those refiners who have not cut the price will be protected with crude. There is no overproduction of crude in either Oklahoma or Kansas and for some time a considerable number of refiners have had difficulty in filling their crude requirements.

CRUDE OIL PRICE CHANGES

(Continued from Page 98)

Below 29 gravity 10 cents, with 1 cent added for each degree upward to 40° and above at 22 cents. The Texas Company met this on July 8; Stanolind Crude Oil Purchasing Co. on July 11 and the Gulf Pipe Line Co. on July 13.

On July 8 the Humble Oil & Refining Co. posted Panhandle crude as follows: Gray County, below 35°, 13 cents, with 1 cent added for each degree up to and including 40° and above at 19 cents, and in Carson and Hutchinson Counties, below 35°, 11 cents with 1 cent added for each degree up to and including 40° and above at 17 cents. The Texas Company on July 11 and the Gulf Pipe Line Co. on July 13 followed, but Phillips Petroleum Co. has not reduced its prices.

On July 11 the Sinclair Refining Co. followed by the Carter Oil Co. and Stanolind Crude Oil Purchasing Co. Tidal Oil Co., Champlin Refining Co., Eason Oil Co. and others posted the 10 to 22-cent price schedule in Oklahoma or in Oklahoma and Kansas. The Gypsy Oil Co. followed on July 13.

On July 8 the Humble Oil & Refining Co. posted a flat 10-cent price in all West Texas fields and in Lea County, New Mexico. The Texas Company followed on July 11 and the Gulf Pipe Line Co. on July 13.

On July 8 the Humble Oil & Refining Co. in Southwest Texas posted Mirando crude at 35 cents; Pettus at 35 cents; Salt Flat at 20 cents, and Darst Creek at 20 cents. The Texas Company followed on July 11 and the Gulf Pipe Line Co. on July 13.

On July 8 in the Gulf Coast the Humble Oil & Refining Co. posted new prices as follows: Below 25° 31 cents, with 1 cent added for each degree up to and including 35° and above at 42 cents. Gulf Pipe Line Co. followed on July 13, and The Texas Company on July 11, but The Texas Company posted 35° at 42 cents, and added 1 cent for each degree up to and including 40° and above at 47 cents. Refugio heavy was posted at 35 cents flat and Markham (by The Texas Company) at 25 cents flat. All other coastal purchasers not named above adopted the Humble prices.

On July 11 Standard Oil Co. of Louisiana applied the 10 and 22-cent price schedule to the North Louisiana and Arkansas fields where it buys on a gravity basis, cut Smackover to 15 cents and Urbana to 10 cents and quit posting in Bellevue and Cotton Valley.

The Ohio Oil Co., Midwest Refining Co. and the Continental Oil Co. on July 10 cut prices in Montana, Wyoming and Colorado. The cuts as a rule were 15 cents per barrel.

In the Pennsylvania grade fields the South Penn Oil Co., Pure Oil Co. and Tide Water Pipe Co. cut all crudes 15 cents per barrel on July 11.

On July 11 the Ohio Oil cut Lima, Indiana, Illinois, Princeton, Wooster and western Kentucky crudes 15 cents per barrel and the Pure Oil Co. cut Midland, Mich., crude 15 cents per barrel.

In the Louisiana-Arkansas area, effective July 13 Louisiana Oil Refining Corp. met Standard Oil Co. of Louisiana prices for crude with exception of Urania which remains at 30 cents. Gulf Refining Co. also met all prices with the exception of Calion and Smackover, Arkansas, which remains at 37 cents, effective July 13. The Atlantic Oil Producing Co. is not buying crude in any of the fields. In Arkansas the Lion Oil Refining Co., Ouachita Valley Refining Co. and Spartan Refining Co. met Standard Oil posted prices. McMillan Petroleum Co. met the new prices, but will pay 7-cent premium. Henry L. Cross Co. will not meet the new price and is still paying 25 cents for Smackover.

Effective July 14 the Ashland Refining Co. posted a 40-cent price for Somerset, Ky., crude in Cumberland Pipe Line Co.'s line, a drop of 15 cents per barrel.

TEXAS LEGISLATURE FOR CONSERVATION

(Continued from Page 17)

demnify all persons who may suffer damage through the violation of the rule attacked in the suit. This bond must live through the proceedings and the court is authorized to change the amount and the sureties. Where the order is upheld in whole or in part the court's judgment shall constitute an injunction against violation of the rules and dissolve all temporary restraining orders. Such a judgment can not be stayed by appeal or supersedeas until a final judgment is had and it must be adverse to the commission to suspend the rule complained of.

Both sides are given the right of appeal and the Appellate Court is ordered immediately to certify the questions to the Surpeme Court, where the case is given preference over all others on the docket. It is provided that the appellate court must enter judgment in conformity with the Supreme Court's answers and that there is no appeal from that judgment.

One provision empowers the commission to bring suit in Travis County to enjoin waste and such cases are given the same docket preference. Such suits are cumulative of all other remedies, penalties and damages.

Appointment of Receiver

A new provision is for appointment of a receiver where the commission's rules are violated after the trial court has held them valid. It is made the commission's duty to apply for a receiver in such instances, setting out the specific orders being violated. The bill provides that the receivers shall take charge of the property and operate it, strictly observing the commission's orders. Application may be made to discharge the receiver on a showing that no orders have been violated. Bond may be required before discharging the receiver for indemnification, as set out in the injunction clause of the bill.

If without first having given bond, any party shall produce from any property crude petroleum or natural gas in excess of the amounts allowable to such property under any rule of the commission before any such rule be held finally to be valid and enforceable, in whole or in part, such party and all successors in interest when any such rule is held to be valid and enforceable in whole or in part shall, in the manner and for the time to be prescribed by the commission, reduce the further production in such amount and for such time, that the amount of the reduction shall equal the amount theretofore taken in excess of the allowable amount, provided the commission shall issue its order fixing the amount and time of such reduction only after notice, which reduction shall be so ordered as not to produce waste. Any one dissatisfied with such an order may sue for its annulment or revision.

Right to Sue is Accorded

Nothing in the bill impairs the right of any person to sue for damages caused by the violation of the commission's orders.

The purchase, transportation or handling of crude petroleum or natural gas produced from any property in excess of the amount allowed by any statute order of the commission is prohibited.

The bill relieves no one from compliance with the common purchaser act or the marginal well law.

The bill is made cumulative of other oil and gas statutes. Its emergency clause charges that oil and gas are valuable and irreplaceable natural resources, and that the commission in its endeavor to prevent waste, "is being hindered by suits questioning its powers and duties with respect to such matters."

Representative A. M. Howsley of Albany will not sign the new bill, he said, as he would divest it of every former prejudice and give the new measure a start without any heritages. Mr. Howsley is secretary of the Texas Oil Advisory Committee, which called the oil states conference at Denver for August 10. He suggested that the date be set back two weeks as nine Texas legislators, the governor, the attorney general and the chairman of the Railroad Commission are members of the committee and could not attend with the legislature in session.

DEATH OF J. E. LAWLER

J. E. Lawler, assistant chief gauger for the Stanolind Pipe Line Co., died of apoplexy on Sunday while horseback riding in Mohawk Park, Tulsa. Deceased had been with the Stanolind Pipe Line Co. and its predecessor, the Sinclair Pipe Line Co. for about 10 years. Mrs. Lawler, a granddaughter of the late Daniel O'Day, noted pipe line executive, survives her husband. The funeral was held Monday from Christ King Church in Tulsa.

National Supply Co. Adds to Importance Of Its Midwest Unit

The National Supply Co. is working out plans for the division of the organization into independently operating units in California, the Mid West and the East, in its marketing, with a separate unit for manufacturing. The plan has not reached that point where a definite statement can be made covering it all, but the National Supply Co. (California) and the National Supply Co. (Mid West) are already functioning under the new plan. The change is especially significant so far as the Mid West company is concerned, as the California unit by reason of its remoteness from headquarters in Toledo, Ohio, has had a measure of independence not vouchsafed to the more easterly divisions of the big organization.

The National Supply Co. (Mid West) with O. T. Dawson of Tulsa as division manager will handle the accounting for all the territory between the Mississippi River and California and from the Calgary oil and gas area in Canada to the Gulf of Mexico. Tulsa is the headquarters. A number of key men of the executive, financial, credit and accountancy departments have moved from Toledo to Tulsa and are located in the company's big new office building on East Archer Street. Their staffs have been recruited in Tulsa. The bookkeeping, billing and collections incident to the business done in the immense territory, where 80 per cent of the crude oil in the United States is produced, will be handled in Tulsa, and much other business which in the past has been referred to the Toledo headquarters for decision and action will be taken care of by the division headquarters in Tulsa.

W. P. THOMPSON DEAD

News was received in Tulsa on Monday, July 13, of the death of William P. Thompson, in Bradford, Pa. Mr. Thompson was past 80 years of age. He had been an active oil producer in the Eastern and Mid-Continent fields for many years and was widely known and greatly respected. Mr. Thompson was an active trader on the Bradford oil exchange from the beginning to the end of that famous old institution. He accumulated a comfortable fortune in oil and other investments and was one of the wise investors who foresaw the slump of 1929 and disposed of his stock holdings on a high market. Mr. Thompson is survived by one son, Arthur W. Thompson of Bradford.

CALIFORNIA CRUDE OIL PRICES

(Continued from Page 97)

UNION OIL CO. OF CALIFORNIA

Crude Oil Prices for Its Purchases at the Well for Crude Produced in Strict Accordance With the Production Allocations Made by the California Statewide Curtailment Committee Effective 7 a.m., June 20, 1931

(All gravities above those quoted take highest price for that field)

Gravity °A.P.I.	Signal Hill	Alamitos Heights Seal Beach	Huntington Beach	Athens Rosecrans Dominguez	Torrance	Santa Fe Springs	Playa Del Rey*	E. Coyote Richfield	Montebello	Santa Paula	Orcutt	Coalinga	Lost Hills	McKittrick Kern River Sunset-Midway Elk Hills Buena Vista Hills	Gravity °A.P.I.
11-13.9	....	....	....	....	....	....	....	....	....	....	....	....	....	$.60	11-13.9
14-14.9	$.65	$.65	$.65	....	$.65	....	....	$.65	$.65	$.65	$.55	$.55	$.55	.55	14-14.9
15-15.9	.65	.65	.65	....	.65	....	....	.65	.65	.65	.55	.55	.55	.55	15-15.9
16-16.9	.65	.65	.65	....	.65	....	....	.65	.65	.65	.55	.55	.55	.55	16-16.9
17-17.9	.65	.65	.65	....	.65	....	....	.65	.65	.65	.55	.55	.55	.55	17-17.9
18-18.9	.65	.65	.65	....	.65	....	....	.65	.65	.65	.55	.55	.55	.55	18-18.9
19-19.9	.65	.65	.65	....	.65	....	$.65	.65	.65	.65	.55	.55	.55	.55	19-19.9
20-20.9	.65	.65	.65	....	.65	....	.65	.65	.65	.65	.56	.55	.55	.55	20-20.9
21-21.9	.65	.65	.65	....	.65	....	.66	.66	.65	.65	.57	.55	.57	.55	21-21.9
22-22.9	.65	.65	.65	....	.66	....	.67	.67	.65	.65	.59	.55	.59	.56	22-22.9
23-23.9	.67	.67	.67	....	.67	....	.68	.68	.65	.65	.61	.55	.60	.58	23-23.9
24-24.9	.69	.69	.69	$.69	.68	$.65	.69	.69	.65	.66	.63	.55	.62	.61	24-24.9
25-25.9	.71	.71	.71	.71	.70	.65	.70	.70	.65	.68	.65	.57	.64	.64	25-25.9
26-26.9	.73	.73	.73	.73	....	.65	....	.72	....	.70	.67	....	.66	.66	26-26.9
27-27.9	.75	.75	.75	.75	....	.68	....	.74	....	.72	....	....	.67	.68	27-27.9
28-28.9	.77	....	....	.77	....	.71	....	....	....	.74	....	....	.69	.71	28-28.9
29-29.9	.79	....	....	.79	....	.73	....	....	....	.76	....	....	.71	.74	29-29.9
30-30.9	.81	....	....	.81	....	.75	....	....	....	.78	....	....	.72	.76	30-30.9
31-31.9	....	....	....	.83	....	.78	....	....	....	....	....	....	....	....	31-31.9
32-32.9	....	....	....	.85	....	.80	....	....	....	....	....	....	....	....	32-32.9
33-33.9	....	....	....	.87	....	.83	....	....	....	....	....	....	....	....	33-33.9
34-34.9	....	....	....	.89	....	.85	....	....	....	....	....	....	....	....	34-34.9

*Subject to a gathering charge of 5 cents per barrel.

Drilling on Forty Tioga County Farms In Search for Gas

WELLSBORO, Pa., July 11.—Drilling for gas on 40 farms in the Tioga district indicates the activity in this field, some of the wells being sufficiently removed from production to put them in the wildcat class. Additional work has recently started with the building of rigs and the commencement of drilling operations. A number of wells have arrived at the interesting stage that precedes completion.

In the Wayne-Dundee area the Bigelow Gas Corp.'s No. 4 in the Wayne town lot field showed an initial production of 8,500,000 feet.

The deepest well in the Tioga area is the Lycoming Natural Gas Co.'s No. 1 Shoemaker near Somers Lake. It was last reported drilling at 6,670 feet. This is said to exceed the depth of any well save one ever drilled in the Eastern fields. It was spudded in on November 23, 1930. It is being drilled to the Medina sand believed to lie at about 7,000 feet. The cost of the well so far is said not to have exceeded $50,000. A well of that depth in the Oklahoma City Field in Oklahoma would have cost $150,000.

A showing of 250,000 feet of gas was struck at 950 feet in a test on the Williams farm near Woodhull, Steuben County, New York.

A new gas field near Olean, N. Y., has its second producer. Bradford, Pa., operators, including M. F. Shay, Miles Garfinkle, Dr. S. S. Burt, J. P. Smith and James Boyle, have a 2,500,000-foot well in Millgrove, near the village of Portville.

A meeting of representatives of the Lycoming Natural Gas Co., Tri State Oil & Gas Co. and Bigelow Gas Corp. in Elmira in the past week gave rise to the report that the Lycoming company may be interested in the purchase of gas in the Wayne-Dundee Field but the interested parties gave out no statement. Those who attended the meeting were Gale H. Stalker, president, and Mordecai Casson, vice president of Tri-State; J. B. Tonkin of Pittsburgh; J. French Robinson, general manager of Lycoming; George R. Mills, president of Bigelow.

PIPE LINE WALL MAPS ARE NOW AVAILABLE

The demand for copies of The Oil and Gas Journal's latest Pipe Line map has been so insistent it has been arranged to offer a number of wall maps to those desiring them.

These maps, suitable for wall hanging, are 36 inches by 48 inches and show the oil, natural gas and gasoline pipe line systems of the entire United States, each line being identified readily for instant reference.

The price of these wall maps is One Dollar each and they may be obtained at the office of The Oil and Gas Journal, 114-116 West Second Street, Tulsa, Okla.

BUILDING PUMP STATIONS

FORT WORTH, Tex., July 13.—The Sinclair Pipe Line Co. is building a pumping station on the Thompson farm in the I. Proctor Survey, eastern Smith County, to serve on its 12-inch trunk line carrier from the East Texas fields to Teague Station. The station will be equipped with three motor-driven Byron-Jackson centrifugal pumps. The Liberty Pipe Line Co. (Mills Bennett) will also construct a pumping station in this vicinity to serve on its 6-inch carrier from the East Texas district to Rusk Station, where it will tie into the Pure-Van Pipe Line Co.'s 10-inch carrier from the Van Pool to Smiths Bluff.

PAN AMERICAN OF TEXAS

The Pan American Petroleum Corp. of Texas has been formed by the Pan American Petroleum & Transport Co. under the laws of Delaware. It is said it will carry on the operations of the parent company in Texas.

WIND AND POOR CONSTRUCTION GET BLAME FOR DAMAGE IN EAST TEXAS

By L. G. E. Bignell
Petroleum Engineering Editor

A Texas twister and faulty construction united to cause costly damage in the East Texas Field on July 8. Wooden derricks were wrecked, as were wooden structures upon which oil and gas separators were mounted. As a result well connections were broken and the wells flowed wild for a time.

No complete report of the number of derricks wrecked is available but it is known that at least seven wells were running wild after the windstorm. One of them, Sinclair Oil & Gas Co.'s No. 1 Moncrief, located about 100 yards from the main highway between Gladewater and Longview, stopped traffic which had to be detoured for a time because oil and gas blew over the road and there was danger of ignition from exhaust of motor cars or a carelessly lighted match.

No fires occurred at these wild wells and the only loss was in well equipment and in oil and gas, but with the experience of Smackover to guide them it is regarded as unfortunate that operators in this East Texas pool are being tempted by low priced, poorly constructed wooden derricks when the hazards are so great.

Wooden derrick wrecked in the town of Overton, East Texas Pool, by summer windstorm.

The character of the country is such that there are wide sand spaces between wooden sections and when the sand become hot under the rays of the summer sun small local whirlwinds, or Texas twisters, are set up which are of sufficient velocity to blow over derricks not of the best construction. In one windstorm in Smackover over 200 derricks were wrecked and while the wind of July 8 seems to have been of a local character it is quite probable that storms of a more serious nature will occur this summer with proportionately greater damage.

It is stated that some rig contractors are building wooden derricks for about $800 each and asserting that they are using kiln-dried lumber. If this is a fact the lumber is being put into the rig at about $25 per thousand, a very low price for good derrick pattern material, and the labor bill must be cut considerably. The results speak for themselves and over the period of operation in this pool no real saving will be gained. The hazards from fire and accidents are too great to justify the cheap equipment.

Not only are these wrecked derricks causing damage to the lease, but in the case of the blow down shown in the accompanying picture, the derrick caved in the back end of a garage in the town of Overton. In this instance the derrick was not guyed and the manner in which it "pancaked" shows the type of construction used. Green lumber is known to be available from local saw mills at relatively low prices and the evidence would indicate that such material and the fewest possible number of nails are being used.

Hazards of Field High

The fire and accident hazard in the East Texas Field is unusually high and in the haste to get oil little attention is being yaid to protective measures. In California there has been worked out a well organized plan for the mobilization of experts and equipment for combating fires and such a system in East Texas should prove of immense value.

In drilling these wells heavy rotary mud is used. As the hole is usually finished with 8¼-inch bit and 6⅝-inch casing with liner set opposite the sand, there is a considerable quantity of mud to handle. The wells are tubed and some companies have tried washing them in with fresh water and have had varied success with this method. However, now that fresh water is at a premium, many of the wells are being swabbed in through the tubing and it is only with the use of the greatest care that such an operation can be carried on successfully and safely.

The well head is equipped with master gates on the tubing and the plan followed by the swabbing-in crew, which is not the regular rotary drilling crew in many instances, is to lower the mud head in the well by successive runs with the swab. As they near the bottom of the hole it is hoped that they will be able to come out on the last required run with just enough mud betwen the swab and the oil to permit the master gate to be closed after the swab is in the clear above the gate. If the oil and gas come up the tubing too fast the swab may be blown out of the tubing and the well come in out of control and in shutting in gates almost anything may happen.

Unheard of Practices Followed

An excess of labor and a desire on the part of the operators to cheapen operations in East Texas have brought about things practically unheard of in other fields where orderly drilling and producing methods have been followed. The "swabbing crew," one of the innovations in East Texas, is made up of a group of men, with more or less experience in production practice, and an old tractor equipped with winch. The crew hires out for about $50 a day to a contractor or owner who has a well to bring in and agrees to swab the well into production. This is a much cheaper rate than the drilling contractor could afford to give, for it is estimated that it would cost him nearly $200 a day for such services.

The natural result is that the swabbing crew will try to get its work done as quickly as possible, perhaps to gain a bonus offered for rapid completion, or if the job is contracted at a lump sum, to reduce the time required all possible. The result is that several fires have occurred in East Texas fields that may be attributed, at least in part, to this cheap practice in bringing in wells.

It is reported that many wells are being cased with old discarded 6-inch drill pipe from the Oklahoma City area and while this may have been good pipe for a drill stem its use for well casing may later have drawbacks. The well must be cased if it is to be swabbed in, for the inside of the drill pipe at joints will not permit swab rubbers to pass on the pull out.

Junk Dealers Equip Wells

Operators who are doing all of their development upon assignment of portions of the future oil to everyone with whom they deal have been reported as assigning as much as one-half of their remaining interests to junk dealers who agreed, for this production, to equip the well for pumping.

Old second hand, and perhaps discarded rig irons, band wheels, rig fronts and second hand material of all kinds are moved to the location and assembled in some fashion and the well is put on the beam. The junk dealer has fulfilled his part of the contract and the owner is getting some oil but how long such an outfit will hold together is questionable. It does tend to cheapen the cost of getting the oil, but even with all of these expediencies it is questionable whether anyone is actually making any money out of producing oil in East Texas.

Junk material is being used in many of the drilling and producing operations in East Texas and while it is ridding the industry of a lot of old equipment that will never again be used it is creating an apparently low operating cost that is perhaps having its tendency to cause some operators, new in the industry, to dispose of their oil at any price regardless of its value.

It is stated that wells are now being drilled at a cost of $12,000 to $15,000 as against former prices of $25,000 because old pipe and equipment are used. Drilling prices have been reduced in some cases from $2.50 per foot to $1.75 and in every way the whole series of operations has been cheapened to the point where greater risks are being introduced into each step of developing the property.

Even some of the larger companies seem to have lost sight of their experience gained during years of operating in other pools and rush about making locations and buying anything that is available for immediate installation. There may be immediate speeding up of operations and apparent saving in drilling costs, but the industry has been established too long to cause doubt as to the ultimate outcome of such practice.

WORLD MOTOR REGISTRATIONS

A total of 35,805,632 motor vehicles were registered in the world on January 1, and of these 26,697,398 were owned in the United States, according to a census of motor cars by C. F. Baldwin of the automotive division of the Department of Commerce. The per capita registration for the world was one motor vehicle for over 54 persons, while in the United States it was one registration for every 4.9 persons. Despite adverse economic conditions in 1930 the world registration increased by 687,234 over 1929. There were 5,531,468 motor trucks in operation in the world, 29,933,137 passenger cars and 341,027 buses. In the number of motor cars registered the United States was followed by France with 1,459,650; England, 1,308,272; Canada, 224,098; Germany, 679,300; Australia, 563,657; Argentina 366,324; Italy, 291,587; Brazil, 199,570; and Spain and the Canary Islands, 189,650.

RUSCO MANAGERS OPTIMISTIC

At the annual conference of division managers of the Russell Manufacturing Co., maker of automotive fabric products, held in Middletown, Conn., it was announced that April and May business had exceeded that for the preceding three months. All the managers reported a definite improvement and all expressed the belief that the year will be a satisfactory one in the automotive world.

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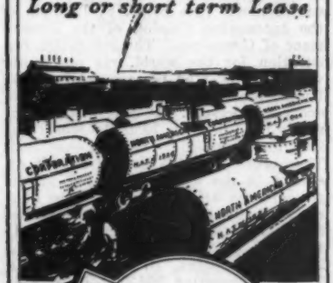

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PAUL VITEK SUCCUMBS FOLLOWING FATAL FIRE

FORT WORTH, Tex., July 13.—The fifth oil well fire started in the East Texas district late Sunday afternoon when Vitek Oil Co.'s No. 2 Eaton, near Overton in Rusk County, ignited as it was being washed in, resulting in the deaths of Paul Vitek, Joe Wedemeyer and J. H. Anderson.

Paul Vitek, well-known Fort Worth oil man, died in a Fort Worth hospital Monday. He rushed into the heart of the flames to the derrick floor to shut off the gate valve to prevent the fire from spreading. When the well caught fire, Mr. Vitek sprang clear of danger, according to Cecil Holland, bookkeeper of the Vitek Oil Co., who was at the well, but when he learned that one man had been trapped by the flames he rushed back to try to cut off the valve.

Mr. Vitek, his daughter, Betty, 14, and a party had gone to see the well brought in.

Joe Wettermark, 23, of Willow Springs was fatally burned when flames enveloped the derrick, and his body, burned to a crisp, was recovered from the slush pit about 9 o'clock Sunday night with a lasso thrown by Ranger J. W. Sadler.

J. H. (Blackie) Anderson, 28, of Cooper, Tex., the tool pusher, died in an Overton hospital at 2 o'clock in the afternoon from burns.

Floyd Kinley, who recently extinguished the burning Tulsa Oil Co.'s No. 1 O'Quinn, 1 mile north of Vitek's No. 5 Eaton, has been called to take control of the situation. M. R. Benninger, Vitek's superintendent, has three crews at work laying a 4-inch water line to the flaming gusher. The plans call for five streams of water, which will be directed on the men as the debris is cleared from the well.

The fire has spread over a large area as oil is escaping from the tubing and both flow lines. It is thought a preliminary blast will be necessary to remove the christmas tree before the big shot that is to snuff out the flames.

LESS CRUDE IMPORTED FOR MAY THIS YEAR

WASHINGTON, D. C., July 11.—Crude petroleum was imported into the United States in May to the amount of 4,512,194 bbls. valued at $3,859,857, a decrease from 4,984,129 bbls., valued at $5,508,689 in May, 1930.

Of these imports 2,056,377 bbls. came from Venezuela, being an increase from 1,985,662 bbls. imported from that country in May, 1930; 1,088,000 bbls. came from Colombia, an increase from 1,002,000 bbls. imported in May, 1930; 1,085,500 bbls. came from Mexico, compared with 817,000 bbls. in May, 1930. These increases were offset by a drop in imports from the Netherland West Indies, 219,966 bbls. being imported in May, a decrease from 738,067 bbls. coming in in May, 1930.

There was a drop in the importation of advanced and refined oils from 3,589,000 bbls. in May, 1930, to 2,841,972 bbls. in May, 1931.

Gasoline, naphtha and other finished light products imported decreased from 1,767,546 bbls. in May, 1930, to 1,049,588 bbls. in May, 1931. Most of this gasoline, 1,689,113 bbls., came from the Netherland West Indies.

The importation of paraffin and paraffin wax decreased from 3,726,056 bbls. in May, 1930, to 1,393,559 bbls. in May, 1931.

Crude petroleum was exported to the extent of 2,267,666 bbls. in May, compared with 2,203,513 bbls. in May, 1930. Of this quantity Canada took 1,832,527 bbls.

Gasoline exports amounted to 4,792,073 bbls., a decrease from 4,920,281 bbls. in May, 1930.

Kerosene exports increased from 815,799 bbls. in May, 1930, to 1,144,874 bbls. in May of this year.

Exports of gas and fuel oil increased from 2,138,341 bbls. in May, 1930, to 2,287,046 bbls. in May of this year.

There was a decrease in exports of bunker and fuel oil for vessels in foreign trade not included in domestic exports from 4,656,952 bbls. in May, 1930, to 4,364,014 bbls. in May, 1931.

Lubricating oil exports decreased from 849,998 bbls. in May, 1930, to 732,393 bbls. in May of this year, when the red and pale oil exported amounted to 495,061 bbls.; black oil, 48,794 bbls., and cylinder oil, 188,538 bbls.—C. E. K.

OIL COMPANY OFFICIAL RETURNS TO UNIVERSITY

HOUSTON, Tex., July 13.—F. W. DeWolf, vice president and general manager of the Louisiana Land & Exploration Co., Houston, Tex., has resigned, effective September 1, when he will return to the University of Illinois as head of the departments of geology and geography. Mr. DeWolf is returning to Illinois, where, prior to 1923, he was state geologist for 15 years.

F. W. DeWolf

Mr. DeWolf has been in charge of the work of the Louisiana Land & Exploration Co. since its active program began in the summer of 1927. It was under his direction that the company acquired extensive holdings in southern Louisiana and carried on an intensive geophysical exploration program which resulted in the discovery of a large number of new salt domes and prospects, the majority of which since either have been found productive or proved out domes, or both.

Previous to his connection with the Louisiana Land & Exploration Co., Mr. DeWolf served the Humphreys Corp. of this city as chief geologist, which position he assumed upon coming to Texas in 1923 from Illinois.

Paul T. Seashore, formerly field superintendent and assistant manager of the company, has been chosen as successor to Mr. DeWolf.

Late Fields

(Continued from Page 28)

W. B. Pine and others' No. 1 Welch, C NE NE NE, Section 6-8-9, found a showing of oil in the Cromwell sand at 3,499-3,518 feet.

Pure Oil Co.'s No. 3 Harjo, SW cor. NE, Section 11-7-6, in the Little River Pool, pumped 502 bbls. of oil after being drilled deeper to a total depth of 4,399 feet. The old total depth was 4,339 feet.

In the East Little River Pool, Sinclair Oil & Gas Co.'s No. 10 Phillips, found a showing of oil and gas in the second Cromwell sand at 3,300-04 feet. The well was drilled deeper from the old total depth of 3,260 feet.

The Indian Territory Illuminating Oil Co. and Phillips Petroleum Co.'s No. 1 Missouri-Kansas-Texas, C N half SW SE SE, Section 34-12-3w, in the Oklahoma City Pool, made 288 bbls. of oil in 10 minutes and was then shut in when the sand began cutting the connections. The oil was found in the Wilcox sand at 6,285-6,427 feet. It was estimated to be a 30,000-bbl. well.

H. F. Wilcox Oil & Gas Co.'s No. 1 Grimes, SE cor., Section 34-12-3w, in the north end of the Oklahoma City Field, was given its first actual potential test and made 5,812 bbls. of oil in three hours. It had the Wilcox sand at 6,368-6,505 feet.

The Mid-Kansas Oil & Gas Co. and Ramsey Petroleum Co.'s No. 6 Preston-Culp, NW cor. NE, Section 6-5-9w, in the Cement Pool, in Caddo County, was drilling at 8,615 feet in sandy shale. It was being drilled with rotary tools and is the deepest test ever drilled in the State of Oklahoma. The other deep test was the Sinclair Oil & Gas Co. test in Harper County which reached a depth of 8,589 feet.

KANSAS

The White Eagle Oil & Refining Co. started running oil from the Ritz-Canton area at 7 a.m. Monday. The company enters the area as a major crude oil purchaser and nominated to take 4,500 bbls. of oil a day from the field. This daily amount of oil would increase the allowable production from the pool from 6 per cent to 11 per cent of the potential.

The potential production of the pool under the unit plan is 91,629 bbls. a day, but it is rated in excess of 100,000 bbls. a day from 69 producing wells. The White Eagle Refining Co. completed its gathering lines in advance of the projected 6-inch main pipe line which is under construction from the Ritz-Canton Pool, in McPherson County, to the company's refinery at Augusta in Butler County. While the main line is being built the company plans to use the Texas-Empire Pipe Line Co.'s line to the Voshell Pool, and from the Voshell Pool to Valley Center the oil will be transported through the Skelly Oil Co.'s pipe line, and from Valley Center to the refinery at Augusta, the oil will be shipped through the Empire Pipe Line Co.'s lines.

The actual construction work on the White Eagle Oil & Refining Co. main pipe line from the Ritz-Canton Pool, in McPherson County to the company's refinery at Augusta, was started July 9 by the Fredell Construction Co. The line will be a 6-inch conduit, and is to be completed and ready for operation August 1. Two crews are at work on the line, one at the north end and the other at Valley Center in Sedgwick County.

Reynolds & Unruh's No. 1 Koehn, SW cor. NE SW, Section 36-19-2w, made 205 bbls. of oil in 12 hours and was given a potential of 410 bbls. of oil in 24 hours from the Viola lime.

A new location was announced in the southern part of Sumner County. The Trees Oil Co. and Shell Petroleum Corp.'s No. 1 Collins, NE cor. SE SW, Section 6-34-2. The new test is on a block of acreage that has been core drilled by the Shell Petroleum Corp. and is on the Dunkin-Oxford trend. The test is contracted to be drilled to a total depth of 4,200 feet.

One of the recent completions in the Hamilton area of Greenwood County extends production to the southeast. Tidal Oil Co. and others' No. 1 Davis, SE cor. NE, Section 28-23-11, was given a potential of 270 bbls. of oil a day. It is being pumped only two hours daily. The oil was found in the Bartlesville sand at 1,890-1,959 feet.

The wildcat test of Tom Palmer and Gypsy Oil Co.'s No. 1 Stoddenberg, C SW, Section 12-16-10w, Ellsworth County, was drilled deeper in the Silicious lime and made 84 bbls. of oil the first hour and 30 bbls. the second. It is estimated to be a 480-bbl. well from the Silicious lime at 3,331-43 feet.

Oil must fit each machine *as a nut fits its bolt . . .*

In the many thousand varieties of modern industrial machinery, lubrication conditions vary widely

—from 50° F. below zero in refrigeration machinery to 3000° F. above in Diesel engines

—from the light weight of a tiny textile spindle to the thousands of pounds in steel-mill bearings

—from the slow speed of a powerful press or pump to the 3000 r.p.m. of a steam turbine.

The Vacuum Oil Company, through 65 years' cooperation with builders and users of machinery, knows how to fit the right lubricant to each industrial machine.

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PREVENTS FIRES — Fires that never happen are the only kind a plant owner or a truck owner cares to figure on. C&B Safety Loading Equipment prevents fires by keeping explosive vapors out of the air.

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MID-CONTINENT AGENCY

Originators of Oil-Froth Absorbers

WILDCAT OPERATIONS IN KANSAS

(Continued from Page 40)

NORTON COUNTY

Richards et al's No. 1 Colby, Sec. 17-4-21w ..... Rig.

OSAGE COUNTY

Briggs & Smith's No. 1 Wood, SE NW Sec. 21-14-15 .... Shut down 1,050 ft.
Fields' No. 1 Usker, SE cor. Sec. 35-16-17 ..... Shut down 400 ft.

RAWLINS COUNTY

J. G. Durham et al's No. 1 Weaver, SE cor. Sec. 3-2-35w.. Shut down 3,501 ft.

RICE COUNTY

Solar Oil Co.'s No. 1 Zink, SE NW Sec. 3-19-10w ..... Drlg. 3,150 ft.
Detrick & Langston's No. 1 Purcell, NW cor. Sec. 33-19-9w ..... Drlg. 2,330 ft.
Cress et al's No. 1 Sharp, SE NE Sec. 13-20-10w ..... Show oil 3,107-15 ft.; Silicious 3,-330-36 ft.; estimated 1,500 bbls.; shut in.
Allison-Fitzwilliams' No. 1 Blake, NE NW Sec. 9-18-10w. Shut down 1,845 ft.

RUSH COUNTY

Dewey & Mitchell's No. 1 Greenawalt, C SW Sec. 17-19-16w ..... Underreaming 6-in. 3,540 ft.

RUSSELL COUNTY

Agate Oil & Gas Co.'s No. 1 Rochfellow, SE cor. Sec. 6-13-12w ..... Shut down 3,374 ft.
Gilbreath et al's No. 1 Bratton, C NE Sec. 33-11-13w .... Show oil 3,090-94 ft.; shut down 3,504 ft.; plugging back to 3,-189 ft.

SEDGWICK COUNTY

Magnolia's No. 1 McLaughlin, NW cor. 31-25-1w ..... Rig on ground.
Buck et al's No. 1 McNanaman, NE NW NW Sec. 2-29-1. Drlg. 2,870 ft.

SALINE COUNTY

Twin Mounds Oil Co.'s No. 1 Weis, C W half NE NW Sec. 20-13-4w ..... Fishing 2,710 ft.

SHERIDAN COUNTY

Flo et al's No. 1 Shoemaker, SE SW SW Sec. 27-7-26w.. Shut down 2,445 ft.

STAFFORD COUNTY

Rosenthal, Stanolind and Amerada's No. 1 Gray, C NE Sec. 11-24-13w ..... Shut down 2,900 ft.

STEVENS COUNTY

Argus Prod.'s No. 2 Christopher, C NE Sec. 10-33-39w .. Shut down 5,521 ft.

SUMNER COUNTY

Trees Oil Co. and Shell's No. 1 Springate, NE SE SW Sec. 6-34-2 ..... Rig on ground.
Spencer et al's No. 1 Porter, NE SW Sec. 12-33-4w .... Drlg. 2,004 ft.
Otstot et al's No. 2 Marlow, C SE NW SE Sec. 22-33-3w.. Drlg. 3,625 ft.

WASHINGTON COUNTY

Sincox et al's No. 1 Penwell, NW SE NE Sec. 16-3-3 .... Shut down 1,730 ft.

WILDCAT OPERATIONS IN OKLAHOMA

(Continued from Page 39)

HUGHES COUNTY

Wright et al's No. 1 Ott, SE SW Sec. 15-5-11 ..... Shut down 1,645 ft.

KAY COUNTY

Lewis et al's No. 1 Harris, SE NW Sec. 14-25-1 ..... Location.
Mummert Drlg. Co. et al's No. 1 Cormick, C NW SE Sec. 9-27-2 ..... Cleaning out 3,693 ft.
Blackwell Oil Co.'s No. 1 Harshman, Sec. 2-26-1w ..... Rig on ground.

KIOWA COUNTY

Christian's No. 1 Jones, NE SE Sec. 8-7-18w ..... Drlg. 680 ft.

LATIMER COUNTY

P. English's No. 1 Unknown, NW SE Sec. 16-6-19 ..... Shut down 1,542 ft.

McINTOSH COUNTY

Patterson et al's No. 1 Smith, SW cor. NW SE Sec. 32-9-16 ..... Drlg. 5,729 ft.

MURRAY COUNTY

C. R. Williams et al's No. 1 Williams, C NE NE Sec. 21-1-4 ..... Shut down 884 ft.

MUSKOGEE COUNTY

Sioux Oil Co.'s No. 1 Unknown, NW SE Sec. 21-11-19 .... Shut down 1,011 ft.

OKFUSKEE COUNTY

E. L. Robinson's No. 1 Rice, NW Sec. 2-10-9 ..... Location.
Shepard et al's No. 1 Nevens, SE NW SW Sec. 3-12-10.. Shut down 3,690 ft.

OKLAHOMA COUNTY

Citizens Oil Co.'s No. 1 Sage Barber, NE cor. Sec. 21-11-2w ..... Shut down 1,200 ft.
L. C. Hivick's No. 1 Sunset Addition, NW SW NW Sec. 17-11-3w ..... Shut down 5,515 ft.
J. F. Cuniff, trustee's No. 1 Church Land, NE NW SE Sec. 17-12-4w ..... Shut down 6,700 ft.

PAWNEE COUNTY

Rookstool's No. 1 Wylie, NW NE SW Sec. 6-20-5 ..... Shut down 1,950 ft.
Sperry et al's No. 1 Mullrap, SE SW Sec. 2-22-5 ..... Drlg. 3,462 ft.
Cochran et al's No. 1 Green, NE cor. SW Sec. 15-23-5 .... Rig.

PITTSBURG COUNTY

J. Morrison's No. 1 Fowler, NE SE Sec. 13-7-17 ..... Rig.
C. Kennedy's No. 1 Travis, C SW NE Sec. 15-7-14 ..... Rig.
C. Canady's No. 1 Jones, NW cor. Sec. 14-8-14 ..... Rig.

ROGER MILLS COUNTY

Ute Oil Co.'s No. 1 Williams, C SW Sec. 23-12-24w ..... Shut down 5,150 ft.
L. C. Hivick's No. 1 Davis, C NW NE Sec. 4-11-26w .... Fishing 2,956 ft.; show oil.

SEMINOLE COUNTY

Sunray Oil Co.'s No. 1 Sunray, NW SE Sec. 35-5-5 ..... Location.

STEPHENS COUNTY

Ross Southerd's No. 1 McKinney, NE cor. Sec. 25-1-8w .. Abandoned 1,062 ft.

WASHITA COUNTY

Cooper & Terhune's No. 1 Blocker, NW cor. Sec. 29-8-19w. Shut down 1,875 ft.
Burns & Prince's No. 1 Deck, SW cor. Sec. 21-8-18 .... Shut down 1,050 ft.

OKLAHOMA PANHANDLE

TEXAS COUNTY

Western Prod. Co.'s No. 1 Gable, C NE Sec. 24-4-13 .... 9,000,000 ft. gas 2,750-2,860 ft.; completed.
Three Way Oil Co.'s No. 1 Crane, SW NW Sec. 11-1-1S .. Shut down 4,750 ft.

SOUTHERN OKLAHOMA

ATOKA COUNTY

Brookshire's No. 1 R. W. Rowland, NW NE SE Sec. 18-3s-10 ..... Shut down 530 ft.

BRYAN COUNTY

Bryan County Oil's No. 1 Childs, NW SE SW Sec. 7-7-10.. T. D. 650 ft.
Bush et al's No. 1 Commerce Trust, NE cor. Sec. 35-6s-9 ..... T. D. 740 ft.; plugged back to 450-80 ft.

JEFFERSON COUNTY

Smith's No. 1 McCarty, SE NW NE Sec. 18-4s-8w ..... Location.
C. V. Chenault et al's No. 1 Grogan, SW NE SE Sec. 15-7s-6w ..... Shut down 1,824 ft.

LOVE COUNTY

Autrey et al's No. 2 Cross, CWL SE NE Sec. 27-6s-2 .... Show oil and gas 970-73 ft.

MARSHALL COUNTY

Nelf et al's No. 1 Rutland Trust, C SE SE Sec. 29-6s-7 .. Abandoned 1,110 ft.
Taliaferro et al's No. 1 fee, NW SE SE NW Sec. 34-5s-5 ..... Shut down 500 ft.
McCrory et al's No. 1 Little, NW SW Sec. 30-7s-6 ..... Bailing 10 bbls. of oil 495-97 ft.; recemented csg.; pumped 110 bbls. 30 hrs.
D. H. Curry's No. 1 Ward, NE SE SW Sec. 15-5s-6 .... Shut down 2,310 ft.

McCURTAIN COUNTY

The Oil Journal's No. 1 Parks, C NE NW Sec. 9-6s-23 .... Shut down 50 ft.
Stewart's No. 1 Patterson, C SE SE Sec. 7-6s-24 ..... Shut down 840 ft.

STEPHENS COUNTY

Brown's No. 1 Hightower, SW SE NE Sec. 15-3s-5w .... Drlg. 731 ft.

PUSHMATAHA COUNTY

George's No. 1 Lane, NW SE Sec. 32-3s-15 ..... Shut down 840 ft.

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Thousands of producing companies everywhere find that it pays to install EPCO Pumps.

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Fig. 106-A Jenkins Standard Bronze Globe Valve, Screwed. For 150 lbs. steam or 250 lbs. water working pressure. Special features are one-piece screw-over bonnet, and slip-on stay-on disc holder.

This Bonnet has Unity, Solidity, Durability

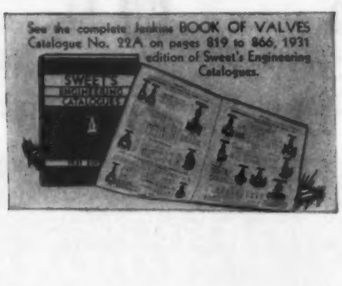
BY combining the two unique advantages of the one-piece screw-over bonnet and the slip-on stay-on disc holder, Fig. 106-A is in a class by itself. There is no other standard bronze globe valve like it.

This bonnet is cast in a single solid piece. Of generous proportions, it has unusual strength. You can take it off the body repeatedly and it won't distort. Neither will it spring.

Note the large generous faces of the hexagon. Providing more than ample purchase for the wrench, they make it easy to remove the bonnet.

Fig. 106-A has more spindle threads in contact with the bonnet, an extra deep stuffing box holding more packing, and, of course, the Jenkins renewable disc which insures leak-tight closing.

This series is also made in angle, cross, and check patterns. At your supply house. Write to us for Form 141.


See the complete Jenkins BOOK OF VALVES Catalogue No. 22A on pages 819 to 866, 1931 edition of Sweet's Engineering Catalogues.
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Jenkins
BRONZE IRON STEEL
VALVES
Since 1864

RATES OF SOLUTION OF CRUDE OIL AND GAS

(Continued from Page 68)

to furnish motive power for the pump. When one gets run down pretty well, we use it for preliminary compression, switching over to the high-pressure one to finish the compression stroke, thus conserving the air supply.

This is a steel apparatus, and there is some possibility of difficulty in knowing where the mercury level is. There is an electrical contact down at the bottom; and when the mercury drops below that point, a light switches off and serves as a signal. We have a control valve in the mercury line which gives us a very good control. On the compression stroke the mercury level rises, and two contacts and lights furnish preliminary warnings. As the mercury rises farther, it enters a small tube to aid in accuracy of volume displacement, as in the case of the ordinary pipette or volumetric flask. This small tube is about three-sixteenths inch in diameter. Down the center, insulated from the walls, runs a small graphite rod. As a matter of fact, a piece of graphite out of a lead pencil is used. As the mercury comes in contact with the lower end of that rod, it causes a deflection in a galvanometer. As the mercury rises around the rod, we are able to follow the exact location with a Wheatstone bridge, and to bring it to a definite point which we can easily duplicate. The whole upper end of the pump and the tube connecting it to the saturation cell are heated to approximately 210° F. This is done in order to avoid condensation of the liquid in the upper part of the pump and connecting tube. With the gases we have been using, we are pretty safe from condensation under these conditions. Obviously, if the liquid was allowed to condense in the system, a large proportion of the sample would be left in the pump head and not reach the saturation cell.

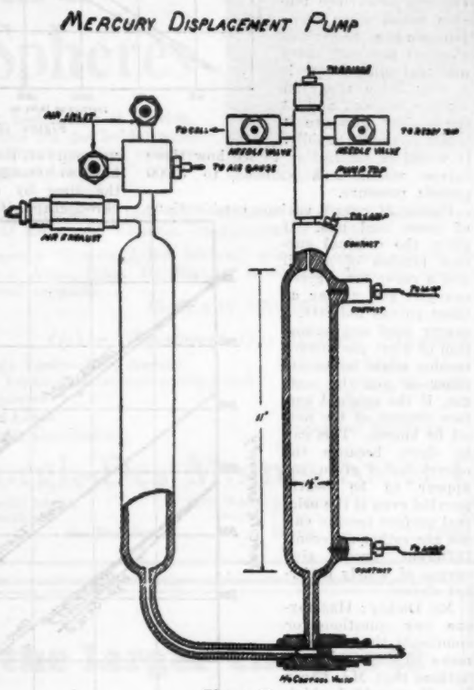

Figure 16.

Figure 16 shows a detail of the pump and the various contacts and control valves. We have had very satisfactory service from this apparatus.

We have filled our saturation cell to 2,000 pounds pressure, and at the end of three days were able to tell by the pressure gauge whether our thermostat was a degree high or low. In other words, the system is tight enough to be a pretty good gas thermometer.

Figure 17 shows three runs which were made from Standard Oil Co.'s well No. 38 in Kettleman Hills Field. These runs are made by starting out at atmospheric pressure and a given temperature, say 140° F. The pressure is increased in steps, as indicated by the points on the curves, each time saturating the liquid with the gas, establishing temperature equilibrium, and then making observations of cell pressure and quantity of gas admitted. Both the oil and the gas came from the same high-pressure trap at 500 pounds pressure. Our results should indicate the amount of this particular gas that could be dissolved if put back into contact with the liquid at high pressure, provided that equilibrium were attained.

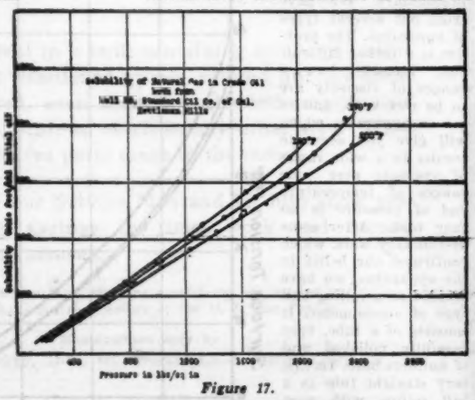

Figure 17.

Figure 18 shows a comparison of similar experiments for well No. 38, which was high on the formation, and for No. 1 Huffman (Superior Oil Co.), which was some distance away and gave a much heavier oil as indicated on the curves. In each case both the gas and oil came from the particular well cited, being taken from 500-pound traps.

These curves are merely given as examples of the sort of thing we are getting, and are not given as very accurate, because the calculations involve the determination of the change in volume of the liquid as gas dissolves. These determinations are being made by Cragoe and Jessup at the Bureau of Standards on the same samples of liquids that we are using. So far we have no values from them, and can make no final calculations. We did, however, make some preliminary determinations of our own for the Kettleman Hills samples to get some idea what our results looked like.

We have a lot more results than these and better, because we have improved our apparatus since these were made. These results cover the solubilities of Santa Fe Springs gas in 12 representative crude oils at pressures from atmospheric to 2,400 pounds per square inch and at 20° temperature intervals from 80° to 200° F. They should give an indication of the changes to be expected, for a given gas, with changes in character of the crude throughout any range to be anticipated in this country.

(Continued on Next Page)

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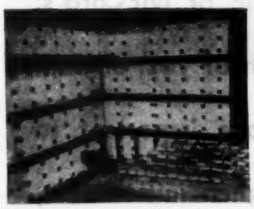
Transite*—end maintenance costs...reduce fire hazard...build permanently ...reërect inexpensively



Interior of insulated Transite casing erected outside air-cooled furnace walls. Brick work is laid after the casing is completed.

THE Oil Industry has been quick to recognize the economies of this man-made "stone lumber." Transite made from asbestos fibres and Portland cement, combined under enormous pressure into flat and corrugated sheets, is rotproof, fireproof and rustproof—as indestructible and long lasting as the age-old minerals in it.

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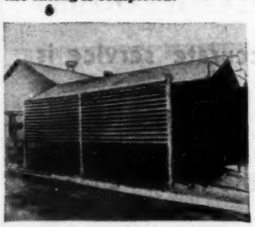
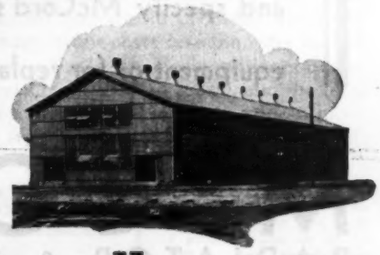


Transite louvres and a corrugated Transite roof over cooling coils in a gasoline plant.

Transite Flarebacks offer economical, efficient protection against fire spread from tank boil-overs. Inexpensive to erect...cost nothing for upkeep...can be dismantled and reconstructed.



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A material that defies time, fire and weather— Transite *FLAT OR CORRUGATED*

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McCord also manufactures McKim Metallic Asbestos Gaskets widely used throughout the oil fields. Ask for catalog No. 17
DETROIT MICHIGAN

Project No. 36 has been carried on under the direction of R. A. Millikan and Charles A. Swartz on the variation of surface tension with dissolving of gas in an oil. Doctor Swartz, in his determinations, used the capillary-rise method at high pressure, observing his capillary through glass windows. He used pressures up to a little over 2,000 pounds.

Figure 19 shows the change of density values which he needed in his capillary-rise calculations. These values are for saturation at each pressure, of course.

Figure 20 shows the changes in surface tension found when using teh same Sugarland (Texas) gas with three different oils. There is a very large range in surface tension, and at the highest pressure it is still changing rapidly. It would be interesting to see how these curves would look extends to 3,000 pounds pressure.

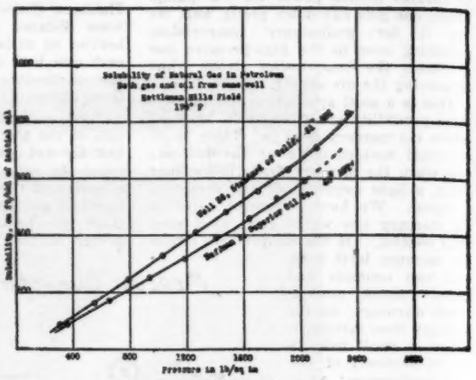

Figure 18.

Figure 21 covers various combinations of gases and oils. If given the original surface tension of an oil and a curve for a given gas you get, as far as these curves indicate, a pretty good approximation of what the surface tension might be for another oil and the same gas, if the original surface tension of the new oil be known. This can be done, because the curves for a given gas appear to be nearly parallel even if the original surface tension values are rather different. Different gases give curves of widely different slopes.

Mr. Dickey: Has anyone any questions or comments they wish to make on these determinations that Mr. Lacey has discussed? I think that Mr. Lacey's discussions on these papers has not only confirmed some of our present views, but has advanced our knowledge considerably in Institute Project No. 37. It looks as if the advisory committee of the institute had picked the right problem to keep on their list.

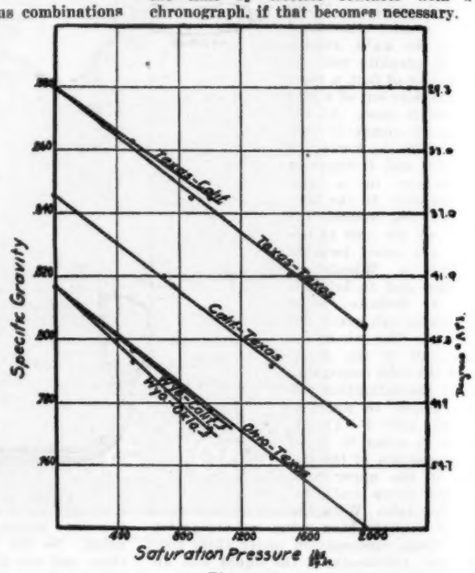

Figure 19.

Mr. Lacey: Our work on viscosity has been preliminary. We have tried out several types of apparatus. The problem is a rather difficult one, because large ranges of viscosity are to be met with, and to get an apparatus which will give you accurate results in a wide range of viscosity over wide ranges of temperature and of pressure is no easy task. After some preliminary work which confirmed our belief in the apparatus, we have decided on a rolling ball type of viscosimeter. It consists of a tube, very carefully polished and of uniform bore. In this very straight tube is a ball rolling with very small clearance, so that the flow past the ball must be of the straight-line type, as nearly as possible, even if water and fluids of lower viscosity than water are used. We hope that this apparatus is going to give us good results. The apparatus is the same in principle as that used by Hersey, but is of different design to meet a somewhat different problem.

We plan to saturate the liquid with gas in the apparatus and make the measurement at the same pressure, and we have so arranged it that we can measure the time by electric contacts with a chronograph, if that becomes necessary.

We have adopted the procedure of maintaining the tube in a constant position and releasing the ball by means of a quick release with the apparatus in the stationary position, rather than to tip it and let it drop into position. In our pre-

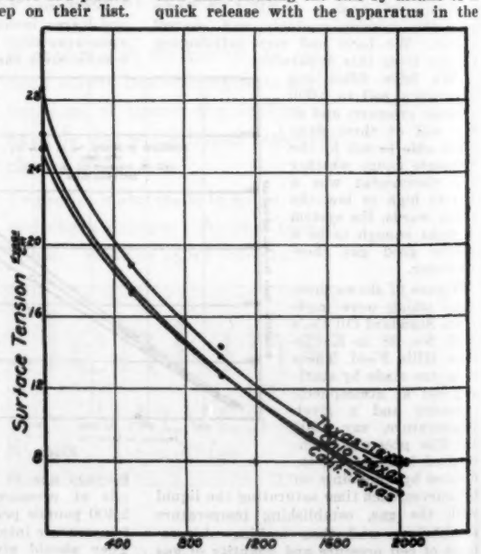

Figure 20.

PITTSBURGH DES MOINES

Gas Holders and Pressure Spheres

TO secure a better idea of its size, compare this big gas holder with the man's figure standing midway of its length of 110 feet.

This "Pittsburgh-Des Moines" holder was completed (including painting and final test) in April, 1931, for the City of Richmond, Virginia. Its diameter is 20 feet.

At the right is shown a "Pittsburgh-Des Moines" pressure sphere erected for the Iowa Railway and Light Corporation at Ames, Iowa. Its diameter is 40 feet. Note the specially constructed concrete foundations and steel supports.

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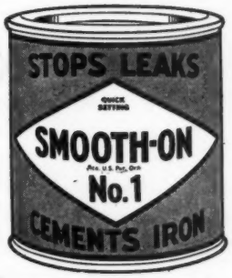

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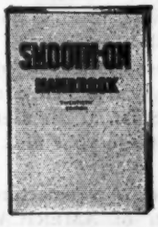

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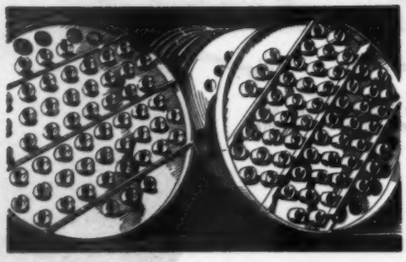

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STAINLESS STEEL

liminary experiments we found very good reproducibility of this method; and we found that the results even with the crude preliminary apparatus were satisfactory for liquids of known viscosity.

Question: How long a time?

Mr. Lacey: I think the shortest time we met in preliminary tests was, with a liquid of lower viscosity than water, in the neighborhood of 17 or 18 seconds for the ball to roll. We would plan to use at least two balls interchangeably, one with very small clearance and one with slightly larger clearance, rather than to change the angle. That method has been used before satisfactorily.

This apparatus can be used with the same compression system we have used before, and the work can be carried on with the same samples.

Before closing, I should mention that R. W. Stenzel has made some measurements on heats of immersion of silica in several different liquids. These data were obtained to ascertain whether some of the constituents of petroleum were more apt than others to remain clinging to the sands during the last stages of production. Although his data are not numerous enough to draw far-reaching conclusions, it seems likely that the paraffins and naphthenes should be more easily removed than the aromatic hydrocarbons. The latter would, in turn, be more easily removed than mercaptans. These last seem to behave much like water as regards the heat of immersion of silica. It is hoped that this work will soon be published in one of the chemical journals.

Mr. Dickey: I feel that this group certainly owes Mr. Lacey a vote of thanks for coming here and presenting this information. It has taken Mr. Lacey quite a while to get his apparatus in shape, and I think he has demonstrated to us tonight where we are going to get some worth while results. This should be of interest to all. I think we owe him a vote of thanks for coming here and telling us what they are doing.

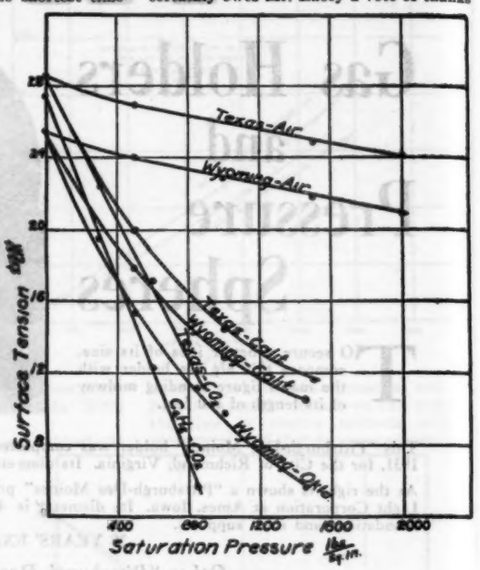

Figure 21.

REPORT OF BUREAU OF MINES FOR THE MONTH OF MAY, 1931

SUPPLY AND DEMAND OF ALL OILS

(Including wax, coke and asphalt in thousands of barrels of 42 U.S. gallons)

NEW SUPPLY:	May, 1931	April, 1931	May, 1930	Jan.-May, 1931	Jan.-May, 1930
Domestic production:					
Crude petroleum	77,164	75,101	80,342	346,298	389,097
Daily average	2,489	2,437	2,592	2,393	2,577
Natural gasoline	3,814	3,824	4,521	19,457	22,183
Benzol	186	187	254	923	1,238
Total production	81,164	77,112	85,117	366,678	412,518
Daily average	2,618	2,570	2,746	2,428	2,732
Imports:					
Crude petroleum	4,512	4,162	4,984	21,531	25,363
Refined products	2,847	3,458	3,603	16,888	17,560
Total new supply, all oils	88,523	84,732	93,704	405,097	455,441
Daily average	2,856	2,824	3,023	2,683	3,016
Increase in stocks, all oils	*81	56	1,723	*9,853	11,246
DEMAND:					
Total demand	88,604	84,676	91,981	414,955	444,195
Daily average	2,858	2,823	2,967	2,748	2,942
Exports:					
Crude petroleum	2,248	1,826	2,203	9,309	9,586
Refined products	9,337	8,164	9,469	43,325	56,838
Domestic demand	76,499	74,686	80,309	362,321	377,771
Daily average	2,468	2,490	2,591	2,399	2,502
Excess of daily average domestic production over domestic demand	150	80	155	29	230
STOCKS (end of month):					
Crude petroleum:					
East of California	354,306	356,565	335,019	354,306	335,019
California†	140,816	141,418	148,472	140,816	148,472
Total crude	495,122	497,983	533,491	495,122	533,491
Natural gasoline at plants	995	1,006	920	995	920
Refined products	160,094	157,304	166,001	160,094	166,001
GRAND TOTAL STOCK, ALL OILS	656,212	656,293	700,412	656,212	700,412
Days' supply	230	232	236	239	238
Bunker oil (included above in domestic demand)	4,364	4,044	4,657	19,240	21,256

*Decrease. †Includes residual fuel oils.

SHIPMENTS FROM CALIFORNIA TO EASTERN PORTS IN UNITED STATES*

(Thousands of barrels of 42 U. S. gallons)

	May, 1931	April, 1931	May, 1930	Jan.-May, 1931	Jan.-May, 1930
Gasoline	1,016	1,292	1,432	6,256	7,263
Natural gasoline	336	75	....	805	....
Kerosene	....	....	....	38	99
Gas oil	....	195	333	862	1,656
Diesel oil	....	....	....	....	144
Fuel oil	....	....	2	2	16
Lubricants	1	11	37	38	98
Asphalt	2	2	2	8	10
Total	1,355	1,563	1,807	8,059	9,286

*Compiled by E. T. Knudsen of the San Francisco office of the Bureau of Mines.

(Continued on Next Page)

BUREAU OF MINES STATISTICS FOR MAY, 1931

COMPARATIVE ANALYSES

(Thousands of barrels of 42 U.S. gallons)

	May, 1931 Total	May, 1931 Dy.av.	April, 1931 Total	April, 1931 Dy.av.	Jan.-May, 1931	Jan.-May, 1930
CRUDE PETROLEUM:						
Runs to stills: Domestic	74,298	2,397	70,716	2,357	341,388	372,087
Foreign	4,222	136	3,990	133	20,710	24,823
Total	78,521	2,533	74,706	2,490	362,098	396,910
Imports	4,512	146	4,162	139	21,531	25,363
Exports	2,268	73	1,826	61	9,309	9,586
MOTOR FUEL:						
Production	39,019	1,259	36,601	1,220	174,902	185,780
Imports	1,050	34	1,348	45	6,069	6,488
Exports	4,992	161	4,187	140	20,634	27,486
Stocks*	47,948	....	48,587	....	47,948	54,046
Domestic demand	35,716	1,152	33,400	1,113	153,130	153,997
KEROSENE:						
Production	3,389	109	3,397	113	17,193	22,391
Imports	.....	....	2	....	4	59
Exports	1,163	38	766	26	5,362	7,364
Stocks	5,960	....	6,129	....	5,960	8,384
Domestic demand	2,395	77	2,804	93	12,758	15,797
GAS OIL AND DISTILLATE FUELS:						
Production	7,622	246	7,512	250	38,395	32,607
Stocks	16,820	....	14,912	....	16,820	15,721
RESIDUAL FUEL OILS:						
Production	22,327	720	22,561	752	108,091	130,099
Stocks†	19,759	....	18,943	....	19,759	20,943
GAS OIL AND FUEL OIL:						
Production	29,949	966	30,073	1,002	146,486	162,706
Imports	1,788	58	2,091	70	10,755	10,810
Exports	2,675	86	2,232	74	12,702	15,874
Stocks	36,579	....	33,854	....	36,579	36,664
LUBRICANTS:						
Production	2,264	73	2,316	77	11,350	15,105
Imports	3	....	3	....	14	11
Exports	746	24	716	24	3,253	4,362
Stocks	10,119	....	10,463	....	10,119	9,578
Domestic demand	1,865	60	1,850	62	8,963	9,445
WAX (thousands of pounds):						
Production	35,840	1,156	33,040	1,101	187,600	264,600
Imports	1,394	45	3,842	128	12,205	14,457
Exports	17,586	567	21,373	712	114,995	112,634
Stocks	205,803	....	205,105	....	205,803	248,524
Domestic demand	18,950	611	19,024	634	111,599	107,491
COKE (short tons):						
Production	178,400	5,755	168,400	5,613	827,000	766,700
Stocks	1,250,300	....	1,157,800	....	1,250,300	866,100
ASPHALT (short tons):						
Production	304,000	9,806	247,800	8,260	1,055,100	1,241,600
Stocks	379,800	....	360,000	....	379,800	316,800
ROAD OIL:						
Production	529	17	169	6	1,029	1,467
Stocks	508	....	305	....	508	398
MISCELLANEOUS:						
Production	1,100	35	1,019	34	4,489	2,188
Stocks	694	....	703	....	694	525

*Includes motor fuel blends held at natural gasoline plants and in gasoline pipe line systems. †East of California.

RUNS TO STILLS AND OUTPUT OF REFINERIES, MAY, 1931

(Thousands of barrels of 42 U. S. gallons)

INPUT—	Crude oil: Domestic	Crude oil: Foreign	Crude oil: Total	Unfinished oils rerun	Natural gasoline	Total input
East Coast	10,915	3,949	14,864	417	90	15,371
Appalachian	2,999	....	2,999	130	53	3,182
Ind., Ill., Ky., etc.	10,393	....	10,393	325	225	10,943
Okla., Kans., Mo.	9,296	....	9,296	226	451	9,973
Texas	19,228	68	19,296	991	841	21,128
Louisiana and Ark.	5,010	206	5,216	347	277	5,840
Rocky Mountain	1,334	....	1,334	388	102	2,324
California	14,623	....	14,623	640	*1,158	16,421
United States total	74,228	4,223	78,521	3,464	3,197	85,182
Texas Gulf Coast	13,424	68	13,492	912	535	14,939
La. Gulf Coast	3,301	206	3,507	12	180	3,699

OUTPUT—	Gasoline	Kerosene	Gas oil and fuel oils: Gas oil and distillate fuels	Gas oil and fuel oils: Residual fuel oils	Gas oil and fuel oils: Total	Lubricants	Wax (thousands of lbs.)
East Coast	5,809	435	1,558	4,423	5,981	597	11,450
Appalachian	1,479	267	199	369	568	346	8,680
Ind., Ill., Ky., etc.	6,602	315	816	1,440	2,256	266	5,040
Okla., Kans., Mo.	5,455	652	831	1,852	2,483	267	2,520
Texas	9,378	858	1,731	5,936	7,667	477	3,360
Louisiana and Ark.	2,285	293	453	1,660	2,113	50	3,360
Rocky Mountain	1,167	90	122	294	416	40	1,400
California	6,344	429	1,912	6,553	8,465	221	....
U. S. total	38,519	3,389	7,622	22,327	29,949	2,264	35,840
Texas Gulf Coast	6,494	669	1,439	3,720	5,159	457	3,360
La. Gulf Coast	1,500	226	311	1,056	1,367	33	3,360

OUTPUT (Cont'd)—	Coke (tons)	Asphalt (tons)	Other finished products: Road oil	Other finished products: Miscellaneous	Other finished products: Total	Unfinished products	Shortage
East Coast	11,800	162,200	69	27	96	770	640
Appalachian	3,500	7,600	56	30	86	197	148
Ind., Ill., Ky., etc.	63,900	38,500	83	454	537	318	92
Okla., Kans., Mo.	29,000	2,400	87	141	228	241	477
Texas	45,500	19,100	10	74	84	1,436	879
La. and Ark.	11,200	36,700	6	131	137	551	140
Rocky Mountain	13,500	....	96	38	134	352	51
California	....	37,500	122	205	327	58	371
U. S. total	178,400	304,000	529	1,100	1,629	3,923	2,799
Texas Gulf Coast	33,100	19,100	10	52	62	1,229	583
La. Gulf Coast	11,000	26,700	....	99	99	249	10

*Includes 86,000 bbls. run through pipe lines.

GASOLINE PRODUCTION BY THE VARIOUS METHODS, MAY, 1931

(Thousands of barrels of 42 U. S. gallons)

	Straightrun Total	Straightrun %	Cracked Total	Cracked %	Natural gasoline Total	Natural gasoline %	Grand total
East Coast	2,491	43	3,228	56	90	1	5,809
Appalachian	808	55	618	42	53	3	1,479
Ind., Ill., Ky., etc.	3,340	51	3,037	46	225	3	6,602
Okla., Kans., Mo.	3,016	55	1,988	37	451	8	5,455
Texas	4,573	49	3,964	42	841	9	9,378
La. and Ark.	1,079	47	929	41	277	12	2,285
Rocky Mountain	545	47	520	44	102	9	1,167
California	3,926	62	1,360	20	1,158	18	6,344
Total	19,778	51	15,544	41	3,197	8	38,519
Texas Gulf Coast	2,854	41	3,305	51	535	8	6,494
La. Gulf Coast	676	45	644	43	180	12	1,500

(Continued on Next Page)

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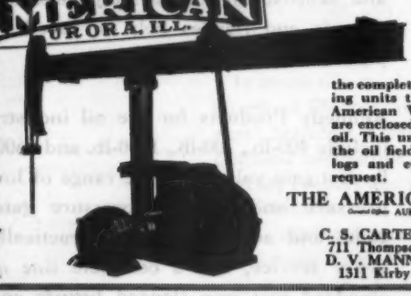

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BUREAU OF MINES STATISTICS FOR MAY, 1931

PRODUCTION OF CRUDE PETROLEUM BY FIELDS, WITH CLASSIFICATION BY GRAVITY

(Thousands of barrels of 42 U. S. gallons)

FIELD:	May, 1931 Total	May, 1931 Dly. av.	April, 1931 Total	April, 1931 Dly. av.	Jan.-May, 1931	Jan.-May, 1930
Appalachian:						
Pennsylvania grade	1,763	57	1,761	59	8,695	11,466
Other (inc. Kentucky)	658	21	714	24	3,634	4,170
Lima-N. E. Ind.-Mich.	321	10	354	12	1,769	2,380
Ill.-S. W. Ind.	448	15	444	15	2,242	2,940
Mid-Continent:						
N. La. and Ark.	3,518	31	2,522	84	13,024	14,357
W. Tex.-S. E. N. Mex.	8,070	260	7,976	266	41,527	51,222
Other (Okla., Kans., N. Tex., etc.)	39,925	1,288	36,376	1,212	160,283	163,215
Gulf Coast:						
Grade A	1,452	47	1,624	54	8,562	13,985
Grade B	3,815	123	3,767	125	17,865	15,250
Rocky Mountain	1,745	56	1,759	59	8,662	9,730
California	16,449	531	15,804	527	80,035	100,382
Total	77,164	2,489	73,101	2,437	346,298	389,097
CLASSIFICATION BY GRAVITY (approx.):						
Light crude	70,632	2,278	66,466	2,216	312,582	343,592
Heavy crude	6,532	211	6,635	221	33,716	45,505

INDICATED DOMESTIC DEMAND FOR CRUDE PETROLEUM EAST OF CALIFORNIA

(Thousands of barrels of 42 U. S. gallons)

Domestic petroleum by fields of origin:	May, 1931 Total	May, 1931 Dly. av.	April, 1931 Total	April, 1931 Dly. av.	Jan.-May, 1931	Jan.-May, 1930
Appalachian:						
Pennsylvania grade	1,656	54	1,921	64	8,809	10,052
Other (inc. Kentucky)	690	22	699	23	3,522	3,999
Lima-N. E. Ind.-Mich.	435	14	332	11	1,587	1,977
Ill.-S. W. Ind.	306	10	612	21	2,277	3,294
Mid-Continent:						
N. La. and Ark.	2,824	91	2,645	88	15,166	15,370
W. Tex.-S. E. N. Mex.	10,322	333	9,878	329	49,409	54,808
Other (Okla., Kans., N. Tex. etc.)	37,368	1,205	35,074	1,169	161,944	162,464
Gulf Coast:						
Grade A	1,682	54	2,137	71	10,829	14,643
Grade B	4,809	155	3,208	107	18,015	14,571
Rocky Mountain	2,721	88	2,059	69	9,141	9,570
California	....	....	....	....	....	109
Total demand	62,813	2,026	58,565	1,952	280,699	290,857
Exports	1,543	50	1,353	45	5,957	5,732
Domestic demand	61,270	1,976	57,212	1,907	274,742	285,125
Foreign petroleum	4,673	151	3,992	133	20,840	25,698
Total domestic demand east of California	65,943	2,127	61,204	2,040	295,582	310,823

STOCKS OF CRUDE PETROLEUM

(Thousands of barrels of 42 U. S. gallons)

EAST OF CALIFORNIA:	May 31, 1931	April 30, 1931	May 31, 1930
At refineries by location:			
East Coast: Domestic	10,082	9,322	9,370
Foreign	3,601	3,597	4,650
Appalachian	2,308	2,358	3,079
Indiana, Illinois, Kentucky, Michigan, etc.	2,428	2,758	3,185
Oklahoma, Kansas and Missouri	5,546	5,507	5,760
Texas: Inland	1,623	1,393	2,428
Gulf Coast: Domestic	7,005	7,220	10,846
Foreign	325	340	264
Arkansas and Inland Louisiana	627	562	993
Louisiana Gulf Coast: Domestic	5,719	5,750	4,252
Foreign	518	768	836
Rocky Mountain	1,937	1,837	1,827
Total	41,819	41,413	47,490
At refineries by origin:			
Pennsylvania grade	2,153	2,015	2,913
Other Appalachian (inc. Kentucky)	818	792	898
Lima-N. E. Indiana-Michigan	179	194	219
Illinois-S. W. Indiana	139	122	128
North Louisiana and Arkansas	3,336	3,772	4,602
West Texas and S. E. New Mexico	3,821	4,181	4,732
Oklahoma, Kansas, North Texas, etc.	17,881	16,948	17,988
Gulf Coast: Grade A	2,717	2,534	4,657
Grade B	4,232	4,313	3,742
Rocky Mountain	1,994	1,832	1,825
California	5	5	36
Foreign	4,544	4,705	5,750
Total	41,819	41,413	47,490
Pipe-line and tank-farm:			
Pennsylvania grade	5,689	5,720	5,669
Other Appalachian (inc. Kentucky)	990	1,048	1,066
Lima-N. E. Indiana-Michigan	1,477	1,576	996
Illinois-S. W. Indiana	10,168	10,044	10,159
North Louisiana and Arkansas	18,996	18,843	21,232
West Texas and S. E. New Mexico	38,957	40,892	49,781
Oklahoma, Kansas, North Texas, etc.	189,647	187,916	198,755
Gulf Coast: Grade A	5,430	5,809	7,856
Grade B	10,593	11,416	11,495
Rocky Mountain	24,340	25,488	24,421
Total	306,287	308,752	331,429
Total refinery, pipe-line and tank-farm	348,106	350,165	378,919
Producers'	6,200	6,400	6,100
Total crude east of California	354,306	356,565	385,019
CALIFORNIA: Light	40,805	40,840	42,912
Heavy (including fuel)	100,011	100,578	105,560
Total crude (including fuel oil in California)	495,122	497,983	533,491

PRODUCTION OF MOTOR FUEL

(Thousands of barrels of 42 U. S. gallons)

	May, 1931 Total	May, 1931 Daily av.	April, 1931 Total	April, 1931 Daily av.	Jan.-May, 1931	Jan.-May, 1930
Straightrun gasoline	19,778	638	18,684	623	87,382	98,277
Cracked gasoline	15,544	501	14,590	486	69,471	66,436
Natural gasoline:						
Blended at refineries	3,111	100	2,789	93	15,095	17,576
Blended at plants*	14	1	13	1	67	122
Run through pipe lines†	86	3	85	3	389	1,051
Jobbers, exports, etc.	300	10	250	8	1,575	1,166
Benzol produced‡	186	6	187	6	923	1,238
TOTAL MOTOR FUEL	39,019	1,259	36,601	1,220	174,902	185,780

*East of California. †To refineries in California. ‡Estimated.

SHIPMENTS OF MOTOR FUEL BY PIPE LINES

(Thousands of barrels of 42 U. S. gallons)

	May, 1931	April, 1931	Jan.-May, 1931
Motor fuel turned into lines	1,127	513	2,523
Motor fuel delivered from lines	862	419	1,923
Stocks in lines and working tanks end of month	800	535	800

(Cont.nued on Next Page)

BUREAU OF MINES STATISTICS FOR MAY, 1931

PRODUCTION OF CRUDE PETROLEUM BY STATES

(Thousands of barrels of 42 U.S. gallons)

	May, 1931		April, 1931		Jan.-May,	Jan.-May,
	Total	Dy.av.	Total	Dy.av.	1931	1930
Arkansas	1,362	44	1,381	46	7,086	8,376
California:						
Kettleman Hills	1,189	39	784	26	4,221	2,052
Long Beach	2,666	86	2,638	88	13,628	15,614
Santa Fe Springs	2,233	72	2,149	72	10,804	22,532
Rest of State	10,361	334	10,233	341	51,382	60,184
Total California	16,449	531	15,804	527	80,035	100,382
Colorado	130	4	128	4	558	714
Illinois	382	13	378	13	1,917	2,635
Indiana:						
Southwestern	66	2	66	2	325	405
Northeastern	3	....	3	....	18	22
Total Indiana	69	2	69	2	343	427
Kansas	3,245	105	3,172	106	15,842	17,183
Kentucky	477	15	528	18	2,686	3,178
Louisiana:						
Gulf Coast	736	24	880	29	4,071	3,007
Rest of State	1,155	37	1,141	38	5,938	5,981
Total Louisiana	1,891	61	2,021	67	10,009	8,988
Michigan	225	7	261	9	1,281	1,791
Montana	257	8	256	9	1,261	1,227
New Mexico	1,400	45	1,197	40	6,050	1,952
New York	278	9	269	9	1,371	1,782
Ohio:						
Central and Eastern	368	12	375	12	1,879	2,243
Northwestern	93	3	90	3	470	567
Total Ohio	461	15	465	15	2,349	2,810
Oklahoma:						
Oklahoma City	5,931	191	5,431	181	21,057	13,806
Seminole	4,702	152	4,596	153	23,233	38,791
Rest of State	7,794	251	7,723	257	38,443	44,856
Total Oklahoma	18,427	594	17,750	591	82,733	94,453
Pennsylvania	825	30	926	31	4,539	6,116
Tennessee	.....	....	1	....	4	5
Texas:						
Gulf Coast	4,531	146	4,511	150	22,356	26,228
East Texas	9,554	308	7,533	251	20,742	.....
West Texas	6,701	216	6,820	228	35,678	49,506
Rest of State	8,699	281	7,921	264	40,966	48,579
Total Texas	29,485	951	26,785	893	119,742	124,313
West Virginia	373	12	376	13	1,850	2,312
Wyoming:						
Salt Creek	771	25	778	26	3,887	4,489
Rest of State	556	18	556	18	2,655	3,064
Total Wyoming	1,327	43	1,334	44	6,542	7,553
United States total	77,164	2,489	73,101	2,437	346,298	389,097

IMPORTS AND EXPORTS OF CRUDE PETROLEUM AND MAJOR REFINED PRODUCTS*

(Thousands of barrels of 42 U. S. gallons)

	May, 1931		April, 1931		Jan.-May,	Jan.-May,
	Total	Daily av.	Total	Daily av.	1931	1930
CRUDE PETROLEUM:						
Imports:	4,512	146	4,162	139	21,531	25,363
From Mexico	1,086	35	773	26	2,866	2,789
From Venezuela	2,276	74	2,493	83	11,605	15,346
From Colombia	1,088	35	834	28	6,280	6,020
From other countries	62	2	62	2	780	1,208
Exports:						
Domestic crude oil:	2,268	73	1,826	61	9,309	8,586
To Canada	1,833	59	1,499	50	7,256	7,342
To other countries	435	14	327	11	2,053	2,244
Shipments	....	....	....	....	....	....
Foreign crude oil	....	....	....	....	....	....
REFINED PRODUCTS:						
Gasoline:						
Imports:	1,050	34	1,348	45	6,069	6,488
Exports†	4,992	161	4,187	140	20,634	27,486
To United Kingdom	1,608	52	1,214	40	6,600	8,138
To France	413	13	408	14	2,433	4,382
To Canada	356	11	363	12	1,223	1,323
To other countries	2,430	79	2,034	68	9,750	13,184
Shipments	185	6	168	6	628	459
Kerosene:						
Exports:	1,163	38	766	26	5,362	7,364
To China	110	3	116	4	636	1,003
To United Kingdom	115	4	151	5	1,225	904
To other countries	920	30	486	16	3,437	5,304
Shipments	18	1	13	1	64	153
Gas and fuel oil:						
Imports	1,788	58	2,091	70	10,755	10,810
Exports:	2,675	86	2,232	74	12,702	15,874
To Chile	307	10	256	8	1,527	1,963
To Panama	305	10	217	7	1,345	1,291
To other countries	1,675	54	1,621	54	8,425	10,881
Shipments	388	12	138	5	1,405	1,739
Lubricants:						
Exports:	746	24	716	24	3,253	4,362
To United Kingdom	160	5	171	6	647	935
To France	103	3	92	3	569	605
To other countries	474	16	446	15	2,004	2,782
Shipments	9	....	7	....	33	40
Wax (thousands of lbs.):						
Imports	1,394	45	3,842	128	12,205	14,457
Exports	17,586	567	21,373	712	114,995	112,634
To United Kingdom	4,409	142	6,435	214	26,171	25,378
To Italy	2,469	80	3,381	113	23,335	16,448
To other countries	10,706	345	11,553	385	65,476	70,795
Shipments	2	....	4	....	13	13

*From Bureau of Foreign and Domestic Commerce. †Includes benzol—15,000 bbls. in May.

RECORD OF WELLS FOR IMPORTANT FLUSH FIELDS, MAY, 1931*

	Completions			Total initial production (bbls.)	Average initial production (bbls.)	Drilling May 31
	Oil	Gas	Dry			
Texas	347	36	199	147,000	400	1,074
East Texas	247	..	24	115,400	500	556
Gulf Coast	30	1	35	19,100	600	78
West Texas	14	..	14	4,600	300	112
California	27	..	13	44,900	1,700	240
Kettleman Hills	3	..	..	31,400	10,500	18
Long Beach	5	..	..	2,900	600	18
Playa del Rey	7	..	2	4,700	700	9
Oklahoma	17	12	36	54,700	3,200	306
Oklahoma County	6	..	..	42,200	7,000	93
Pottawatomie and Seminole Counties	3	..	3	1,900	600	16
New Mexico	..	..	2	.....	.....	44
Lea County (Hobbs)	..	..	1	.....	.....	6
Other states	107	130	105	25,800	200	1,053
Total United States	498	178	355	272,400	500	2,717

*From The Oil and Gas Journal and California office of the American Petroleum Institute.

STOCKS HELD BY REFINING COMPANIES, MAY 31, 1931*

(Thousands of barrels of 42 U. S. gallons)

			Gas oil and fuel oil		
	Gasoline	Kerosene	Gas oil and distillate fuels	Residual fuel oils	Total
East Coast	8,086	1,169	3,732	4,863	8,595
Appalachian	1,847	342	316	506	1,322
Ind., Ill., Ky., etc.	6,439	516	1,201	2,200	3,401
Okla., Kans., Mo.	4,376	475	2,515	2,819	5,334
Texas	7,540	898	3,382	6,995	10,377
Louisiana and Arkansas	2,303	516	567	1,761	2,328
Rocky Mountain	2,064	258	215	615	830
California	†14,483	1,786	4,392	(‡)	4,392
Total	47,138	5,960	16,820	19,759	36,579
Texas Gulf Coast	5,596	806	2,805	4,135	6,940
La. Gulf Coast	2,117	482	365	1,133	1,498

	Lubricants	Wax (thousands of lbs.)			Coke (tons)
		Crude scale	Refined	Total	
East Coast	3,167	33,891	18,570	52,461	35,500
Appalachian	1,180	23,260	3,720	26,980	8,300
Ind., Ill., Ky., etc.	1,169	21,712	2,486	24,198	121,300
Okla., Kans., Mo.	708	1,277	2,214	3,491	102,500
Texas	2,408	1,397	14,320	15,717	660,900
Louisiana and Arkansas	176	56,130	1,349	57,479	36,200
Rocky Mountain	237	23,901	1,576	25,477	124,900
California	1,074	....	....	....	110,700
Total	10,119	161,568	44,235	205,803	1,250,300
Texas Gulf Coast	2,288	1,397	14,147	15,544	583,100
La. Gulf Coast	156	56,130	1,349	57,479	85,900

	Other finished products			Unfinished oils		
	Asphalt (tons)	Road oil	Miscellaneous	Total	Natural gasoline	Other	Total
East Coast	152,600	49	62	111	219	9,837	10,056
Appalachian	23,700	42	52	94	10	1,510	1,520
Ind., Ill., Ky., etc.	67,600	53	235	288	19	5,070	5,089
Okla., Kans., Mo.	3,700	73	27	100	47	3,114	3,161
Texas	6,700	10	16	26	304	15,266	15,570
La. and Ark.	71,900	....	12	12	9	2,424	2,433
Rocky Mountain	3,800	179	35	214	1	1,769	1,770
California	49,800	102	255	357	1,598	§7,888	9,486
Total	379,800	508	694	1,202	2,207	46,878	49,085
Texas Gulf Coast	6,700	10	9	19	288	13,895	14,183
La. Gulf Coast	45,800	....	5	5	....	1,893	1,893

*Stocks east of California represent inventories held by refining companies at or near refineries; California stocks represent inventories held by refining companies on the Pacific Coast of the United State at refineries, at or in transit to water terminals and bulk distributing stations. †Includes 344,000 bbls. engine distillate. ‡Included with heavy crude. §Includes 2,451,000 bbls. tops.

NUMBER OF WELLS COMPLETED IN THE UNITED STATES*

	May, 1931	April, 1931	May, 1930	Jan.-May, 1931	Jan.-May, 1930
Oil	498	519	1,233	2,337	5,503
Gas	178	152	213	932	997
Dry	355	393	649	1,967	2,790
Total	1,031	1,064	2,095	5,236	9,290

*From The Oil and Gas Journal and California office of the American Petroleum Institute.

JOHN E. HATCHER DIES

BEAUMONT, Tex., July 11.—John E. Hatcher, general superintendent of the Yount Lee Oil Co. of this city, died Saturday while en route from Beaumont to Longview to look over his company's operations in East Texas. He was found dead in a hotel room at Zavala, Angelina County, where he had stopped off after becoming ill on the road. Mr. Hatcher had been with the Yount Lee Oil Co. since 1922, starting as a driller in Spindletop. As general superintendent he had charge of all the company's operations on the Gulf Coast and in East Texas. He was 39 years old.

BUILDING MARINE TERMINAL

NEW YORK, July 11.—Further impetus to river marketing of gasoline and other products in eastern waters will be given by the entry of Gulf Refining Co. into this field on a large scale, it is reported.

The Gulf company has filed plans for construction of a modern marine-rail bulk distributing plant on the Monongahela River, near Donora, Pa., the new plant to serve the western Pennsylvania area, and involving the expenditure of approximately $100,000.

GASOLINE EXEMPTIONS GAIN

While May consumption of gasoline in Oklahoma was less than in May of last year, there was a large increase in exemptions claimed, according to report just released by state collection department. The May consumption amounted to 25,650,489 gallons compared to 26,381,712 gallons a year ago, a decrease of almost 1,000,000 gallons. In exemptions, the May figure for this year was 2,613,232 gallons, which contrasts with the 1,574,927 gallons last year, a gain of 1,000,000 gallons.

OIL MAN'S CALENDAR

AUGUST

10—Denver, Colo., Oil States Advisory Committee.

31-Sept. 4—Buffalo, N. Y., American Chemical Society.

SEPTEMBER

1-3—Cleveland, Ohio, twentieth national aeronautic meeting, Society of Automotive Engineers.

16-18—Atlantic City, N. J., annual meeting, National Petroleum Association, Hotel Traymore.

28-29—Atlantic City, N. J., National Association of Motor Bus Operators, Hotel Ambassador.

OCTOBER

2-3—Houston, Tex., Petroleum Division, American Institute of Mining and Metallurgical Engineers.

12-16—Chicago, National Safety Council.

12-16—Atlantic City, N. J., American Gas Association.

14-16—Pittsburgh, Pa., Society of Industrial Engineers.

NOVEMBER

10-12—Chicago, twelfth annual meeting, American Petroleum Institute, Stevens Hotel.

16-21—Pittsburgh, Pa., third International Conference on Bituminous Coal, Carnegie Institute.

DECEMBER

7-12—Atlantic City, N. J., Trade Show, Motor and Equipment—National Standard Parts Association.

9-11—Atlantic City, N. J., American Institute of Chemical Engineers.

28-31—Tulsa, Geological Society of America, Mayo Hotel.

Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS

Pipe Line Report for Month of May

RUNS

	Month (bbls.)	Dly. av. (bbls.)
Prairie P. L. Co.*	843,200	27,200
Gulf P. L. Co.	1,273,488	41,080
Texas P. L. Co.	747,481	24,112
Magnolia P. L. Co.	1,602,600	51,697
Empire P. L. Co.	2,252,945	72,676
Cosden P. L. Co.	660,779	21,315
Stanolind P. L. Co.	3,010,100	97,100
Oklahoma P. L. Co.	2,343,097	75,584
Other lines	7,998,000	258,000
Total May	20,731,690	668,764
Total April	19,980,617	666,020
Difference	751,073	2,744

SHIPMENTS

Prairie P. L. Co.†	2,400,591	77,438
Gulf P. L. Co.	1,361,964	43,934
Texas P. L. Co.	1,335,197	43,071
Magnolia P. L. Co.	1,502,701	48,474
Empire P. L. Co.	2,356,367	76,012
Cosden P. L. Co.	649,137	20,940
Stanolind P. L. Co.†	3,812,442	122,982
Oklahoma P. L. Co.	2,197,196	70,877
Other lines*	7,564,000	244,000
Total May	23,179,595	747,728
Total April	23,028,312	767,610
Difference	151,283	19,882

STOCKS

Prairie O. & G. Co.*	37,560,000
Gulf P. L.-Gypsy Oil Co.	8,943,656
The Texas Company	3,336,837
Magnolia Petroleum Co.	6,302,552
Empire P. L. Co.	5,331,726
Mid-Continent Petroleum Corp.	3,706,274
Stanolind Crude Oil Pur. Co.*.	18,450,000
Oklahoma P. L. Co.	2,731,651
Carter Oil Co.	8,513,813
Other lines*	20,004,000
Total May	114,870,509
Total April	115,563,208
Difference	692,699

*Estimated. †Prairie and Stanolind shipments include Texas crude oil.

EASTERN PIPE LINE REPORT FOR MONTH OF MAY

Runs from Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky, Illinois, Indiana and Michigan for April and May:

	Apr., 1931	May, 1931
Nat. Transit	142,938.57	143,585.75
S. W. Pa. P. L.	75,998.00	74,718.32
Eureka P. L.	294,234.07	293,679.22
Buckeye P. L. (Macksburg)	300,478.22	292,687.45
Buckeye P. L. (Cleveland)	11,192.35	13,408.60
Buckeye P. L. (Lima, etc.)	78,452.79	80,369.42
Indiana P. L.	2,976.41	3,425.44
Cumberland P. L.	166,133.49	158,976.42
N. Y. Transit	28,562.30	28,296.26
Tide Water P. L.	27,008.88	24,946.95
Pure Oil	195,231.33	188,974.65
Stoll Oil Ref.		26,609.87
Bradford Transit	331,147.01	334,013.67
Total	1,647,436.50	1,653,692.08
Daily average	54,914.55	53,344.91

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for April and May:

	Apr., 1931	May, 1931
Nat. Transit	480,757.15	494,823.01
S. W. Pa. P. L.	386,704.21	442,582.39
Eureka P. L.	200,604.46	328,121.10
Buckeye P. L. (Macksburg)	230,921.29	231,067.12
Buckeye P. L. (Cleveland)	2,198.21	1,709.67
Buckeye P. L. (Lima, etc.)	1,677,678.11	1,588,533.48
Indiana P. L.	998,276.65	1,121,162.39
Cumberland P. L.	108,989.29	109,505.58
Southern P. L.	20,351.92	88,868.78
N. Y. Transit	174,908.27	191,931.04
Northern P. L.	166,693.77	177,918.97
Tide Water P. L.	451,375.06	454,064.42
Pure Oil	228,993.49	256,536.46
Bradford Transit	324,367.08	304,084.82
Tuscarora	283,195.69	285,769.63
East Gulf Oil	3,094.01	
Total	5,743,508.77	6,176,679.96
Daily average	191,450.29	199,247.74

Gross Stocks

The gross stocks held by various pipe lines in the oil producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky and Indiana at the close of April and May:

	Apr., 1931	May, 1931
Nat. Transit	790,741.10	753,134.11
S. W. Pa. P. L.	538,721.14	512,338.77
Eureka P. L.	1,762,107.52	1,817,026.88
Buckeye P. L. (Macksburg)	513,877.24	370,904.34
Buckeye P. L. (Cleveland)	46,073.83	58,962.66
Buckeye P. L. Lima, etc.)	3,730,602.32	3,641,367.87
Indiana P. L.	603,582.09	518,335.78
Cumberland P. L.	659,658.19	644,027.51
Southern P. L.	312,817.70	317,548.61
N. Y. Transit	109,067.32	126,136.54
Northern P. L.	291,059.44	339,978.15
Tide Water P. L.	900,197.73	863,211.61
Pure Oil	604,079.70	541,284.20
Tuscarora	12,173.80	13,462.07
Bradford Transit	164,714.48	210,020.88
East Gulf Oil	4,071.47	
Total	11,044,487.59	10,728,239.98
Increase	32,335.03	
Decrease		316,247.61

Grades of Oil

The following table shows the amount of the different grades of oil held by the Eastern Pipe Lines at the close of April and May, showing gross stocks of the above fields:

	Apr., 1931	May, 1931
Pennsylvania	3,966,991.51	3,895,594.09
Lima	809,759.51	792,443.56
Kentucky	674,030.47	654,328.32
Mid-Continent	4,984,054.76	4,854,341.47
Illinois	16,978.58	
Michigan	592,642.76	531,532.55
Total	11,044,487.59	10,728,239.98

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1928	1929	1930	1931
January	52,304	61,749	75,907	52,939
February	57,002	51,833	79,256	55,163
March	57,485	54,252	76,688	54,331
April	56,812	58,444	84,536	54,914
May	62,087	59,902	70,546	53,344
June	58,230	58,833	75,430	
July	57,144	66,087	68,921	
August	57,745	66,087	54,291	
September	53,487	67,315	56,595	
October	58,100	76,093	58,179	
November	53,865	74,831	52,332	
December	52,025	74,561	53,999	

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1928	1929	1930	1931
January	146,465	165,721	217,623	175,369
February	167,368	159,387	224,355	183,494
March	158,883	161,474	228,846	189,508
April	172,935	169,737	241,845	191,450
May	180,559	184,281	248,383	199,247
June	188,024	185,404	234,401	
July	189,470	194,763	207,094	
August	192,853	194,946	205,506	
September	194,138	201,314	193,999	
October	176,000	191,367	157,675	
November	176,898	202,743	146,638	
December	173,572	186,257	143,001	

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines at the close of each month for the past three years:

	1929	1930	1931
January	7,596,564	12,220,045	11,831,092
February	8,738,835	12,991,561	11,506,489
March	9,002,058	13,247,317	11,012,162
April	8,978,172	13,323,961	11,044,487
May	8,903,560	13,052,953	10,728,239
June	8,931,375	13,396,855	
July	9,211,595	13,368,562	
August	9,440,642	13,047,051	
September	9,443,067	12,812,018	
October	9,441,101	12,437,555	
November	9,868,538	11,851,380	
December	11,253,953	11,751,952	

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, June 1	643,438.61
Runs from wells	408,284.85
Other receipts	82,190.26
Regular deliveries	297,567.00
Other deliveries	208,208.37

The amount of Illinois oil run by the Tide Water Pipe Co. in May was 24,946.95 bbls. Deliveries were 24,946.95 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

	Runs	Deliveries
May	433,231.80	333,513.95
1930—		
January	542,587.96	498,293.93
February	548,416.33	414,536.59
March	631,344.49	469,119.53
April	530,074.22	509,304.60
May	606,147.37	504,069.34
June	572,662.57	468,658.81
July	604,529.54	388,454.47
August	594,642.12	375,742.43
September	457,001.11	371,691.83
October	478,442.12	320,688.73
November	422,794.66	355,402.12
December	556,418.78	363,719.56
1931—		
January	468,429.04	469,573.19
February	429,384.54	461,262.45
March	424,638.23	356,663.36
April	421,814.98	282,532.65

Tide Water Pipe Co., Ltd., also delivered in May, 163,543.95 bbls. Oklahoma oil.

AVERAGE DAILY RECEIPTS OF CALIFORNIA CRUDE AND REFINED OIL AT ATLANTIC AND GULF PORTS

Average barrels per day in 1930-31—	ATLANTIC PORTS: Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS: Galveston	New Orleans, Baton Rouge	Port Arthur, Sabine Pass	Tampa	Total	Total all ports
June	3,300	.....	33,933	20,767	2,333	65,333	.....	.....	.....	.....	2,400	67,733
July	17,355	7,774	43,419	23,539	6,452	98,539	.....	.....	.....	.....	4,645	103,184
August	7,413	8,742	38,968	21,226	5,258	81,613	.....	.....	.....	.....	97	81,710
September	6,300	6,400	25,600	13,400	9,567	61,267	.....	.....	.....	.....	2,433	63,700
October	2,516	3,045	37,258	16,419	4,902	64,141	.....	.....	.....	.....	5,355	69,516
November	5,367	6,333	33,800	17,733	4,800	70,733	.....	.....	.....	.....	4,800	75,533
December	5,516	4,322	30,645	9,675	2,580	52,743	.....	.....	.....	.....	4,645	58,387
January	8,387	6,613	21,968	14,678	11,096	62,742	.....	.....	.....	.....	6,129	68,871
February	5,787	2,713	29,143	4,000	5,750	47,393	.....	.....	.....	.....	3,750	51,143
March	10,033	1,611	21,388	7,324	8,774	49,129	.....	.....	.....	.....	6,355	55,484
April	5,133	.....	19,300	16,500	10,067	50,900	.....	.....	.....	.....	4,000	54,900
May	4,452	3,064	19,903	11,226	6,258	44,903	.....	.....	.....	.....	2,355	47,258

AVERAGE DAILY IMPORTS OF CRUDE AND REFINED OIL AT PRINCIPAL UNITED STATES PORTS

Average barrels per day in 1930-31—	ATLANTIC PORTS: Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS: Galveston	New Orleans, Baton Rouge	Port Arthur, Sabine Pass	Tampa	Total	Total all ports
June	51,533	15,667	121,067	45,033	25,033	258,333	4,413	17,867	2,167	1,533	25,300	283,633
July	42,097	9,548	154,968	37,935	26,032	280,580	5,678	9,161	2,097	2,387	19,323	299,903
August	39,032	4,484	145,613	33,355	25,097	247,581	3,419	9,323	5,548	3,000	29,290	276,871
September	38,867	5,533	150,933	34,500	25,567	255,400	6,433	13,334	.....	3,800	25,467	280,867
October	19,839	11,743	146,194	35,355	26,967	240,097	6,965	7,067	2,774	3,545	18,451	258,548
November	39,633	35,800	124,633	36,467	24,667	261,300	2,467	7,366	.....	1,767	11,600	272,900
December	31,419	14,033	122,774	32,829	33,774	234,829	6,290	10,613	2,097	290	19,290	244,129
January	17,613	13,519	154,225	32,903	30,613	248,871	2,032	11,677	2,097	3,097	18,903	267,774
February	31,321	16,929	127,786	31,714	26,857	234,607	4,536	11,571	.....	536	16,643	251,250
March	27,645	18,935	141,160	26,290	21,129	235,161	4,065	2,580	.....	1,968	8,613	246,774
April	35,000	10,533	105,000	29,767	35,533	215,833	2,733	3,400	.....	.....	6,133	221,966
May	30,129	8,774	107,000	25,452	26,710	198,065	.....	2,000	.....	.....	2,000	200,065

GROSS PRODUCTION OF CRUDE OIL IN THE UNITED STATES FOR 12 MONTHS

(In Barrels of 42 Gallons)

1930—		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mts.	Eastern	Total
May:	Month	19,044,444	20,587,503	26,219,488	3,978,385	1,669,895	1,907,452	2,585,219	4,414,000	80,376,776
	Daily average	614,337	664,113	845,786	128,335	53,545	61,543	83,749	142,387	2,592,799
June:	Month	18,020,795	19,754,790	25,643,705	3,765,060	1,704,060	1,825,521	2,519,190	4,238,000	77,621,121
	Daily average	600,693	658,490	854,790	125,502	56,802	60,817	83,973	142,933	2,587,371
July:	Month	18,802,024	18,032,514	25,973,521	3,541,409	1,713,680	2,079,749	3,375,894	3,830,000	77,248,811
	Daily average	606,517	581,694	857,856	114,239	55,280	67,089	108,674	123,548	2,491,897
August:	Month	18,770,466	17,162,024	25,069,598	3,491,530	1,700,102	2,151,120	3,193,341	3,417,000	74,955,191
	Daily average	605,499	553,614	808,696	112,630	54,842	69,391	103,011	110,226	2,417,909
September:	Month	17,934,306	16,509,120	23,111,822	3,405,510	1,683,280	2,008,060	3,239,010	3,396,000	71,287,108
	Daily average	599,477	550,304	770,394	113,517	52,776	66,935	107,967	113,200	2,374,570
October:	Month	18,244,053	16,632,523	23,626,553	3,571,913	1,636,552	2,142,585	3,225,550	3,627,000	72,707,029
	Daily average	588,518	536,533	762,147	115,223	52,792	69,125	104,050	117,000	2,345,253
November:	Month	18,109,459	14,941,770	22,035,222	3,459,330	1,557,870	2,136,948	2,957,100	3,222,000	68,419,699
	Daily average	603,648	498,059	734,507	115,311	51,929	71,231	98,570	107,400	2,280,656
December:	Month	17,786,738	15,057,103	21,810,359	3,433,661	1,590,951	2,157,534	3,118,663	3,328,000	68,281,999
	Daily average	573,765	485,713	703,560	110,731	51,321	69,598	100,602	107,355	2,202,645
1931—										
January:	Month	16,485,798	14,850,953	20,690,452	3,149,073	1,574,955	2,131,937	2,966,142	3,374,000	65,223,310
	Daily average	531,798	479,063	667,435	101,583	50,805	68,772	95,682	108,839	2,103,978
February:	Month	14,930,932	13,371,876	18,944,596	3,369,016	1,402,492	1,981,476	2,747,024	3,129,000	59,896,413
	Daily average	533,248	477,567	677,307	120,322	50,089	70,767	98,108	111,750	2,139,158
March:	Month	16,364,842	16,430,341	22,975,309	3,498,593	1,444,941	2,033,197	2,897,725	3,374,000	69,019,263
	Daily average	527,898	530,011	741,139	112,858	46,611	65,587	93,475	108,839	2,226,428
April:	Month	15,803,541	16,717,650	26,611,890	3,281,880	1,412,220	1,920,780	2,888,100	3,373,000	71,909,061
	Daily average	526,785	557,255	887,063	109,396	47,074	64,026	96,270	109,100	2,396,969
	Total 12 months	210,347,388	200,048,087	282,732,515	41,944,265	16,980,998	24,577,169	35,592,958	43,672,000	856,895,480